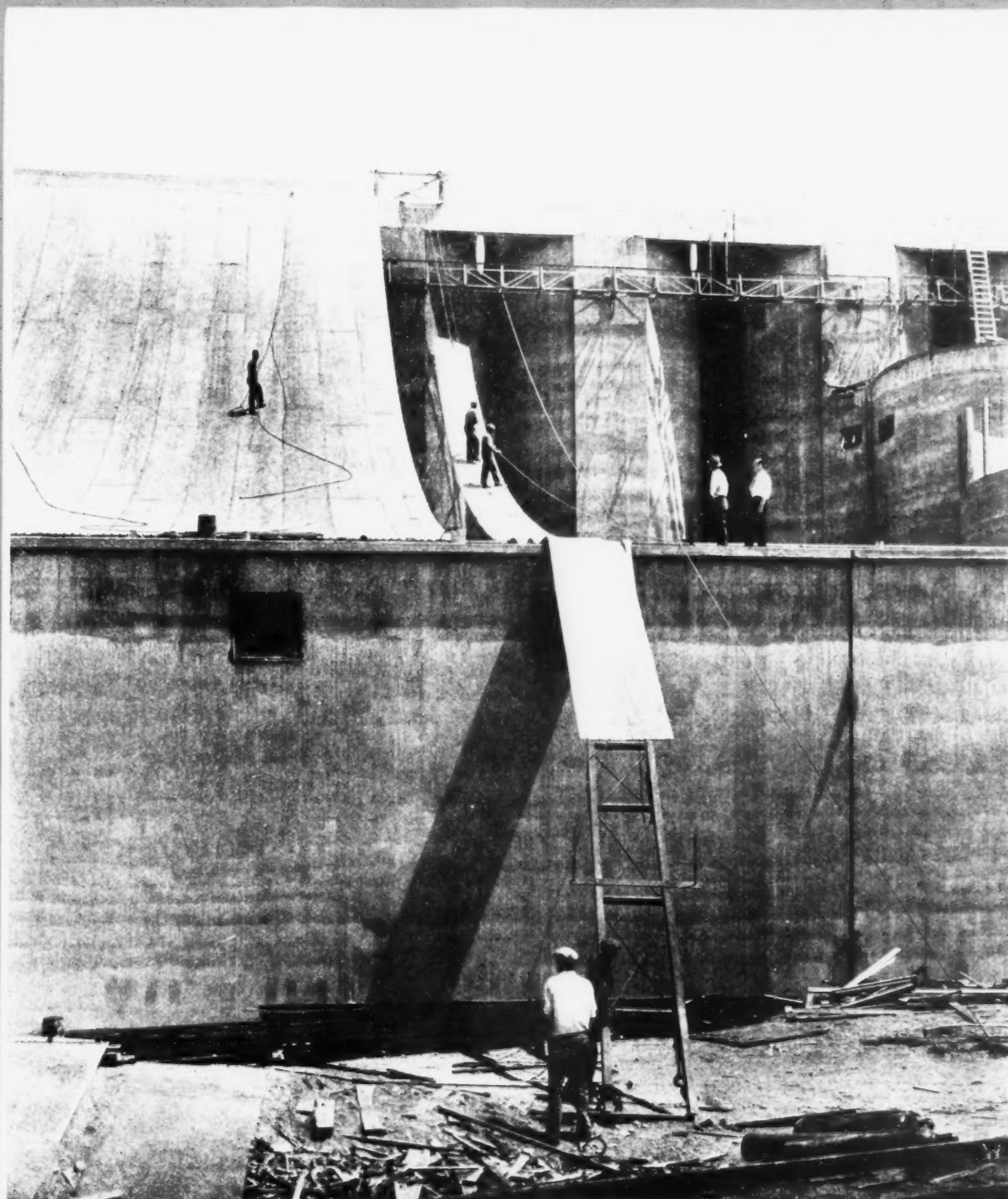


AMERICAN ARTISAN

WARM AIR HEATING • SHEET METAL
CONTRACTING • AIR CONDITIONING



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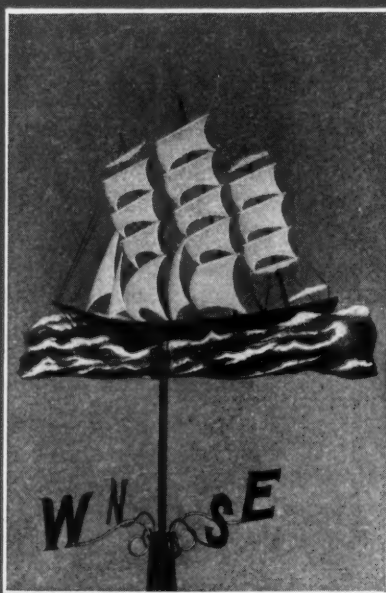
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Toncan Iron in Bromo-Seltzer tower since 1911, and still in perfect condition.



Toncan Iron weathervane designed and fabricated by C. Nash and Son, Daytona Beach, Florida.



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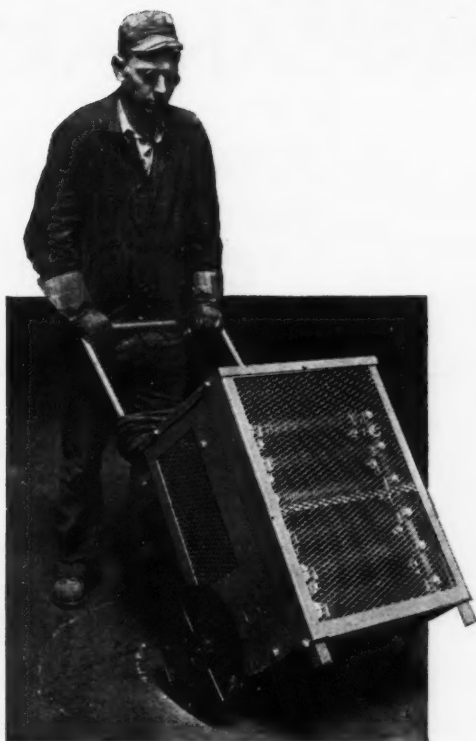
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GENERAL OFFICES  YOUNGSTOWN, OHIO



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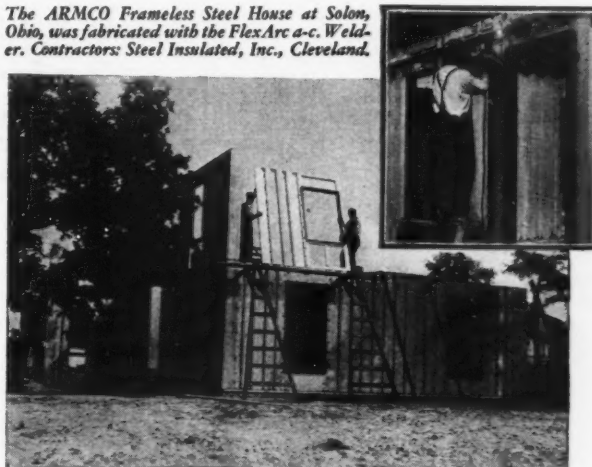
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AMERICAN ARTISAN

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FURNACES
and
SHEET METALS

**Warm-Air
Heating**

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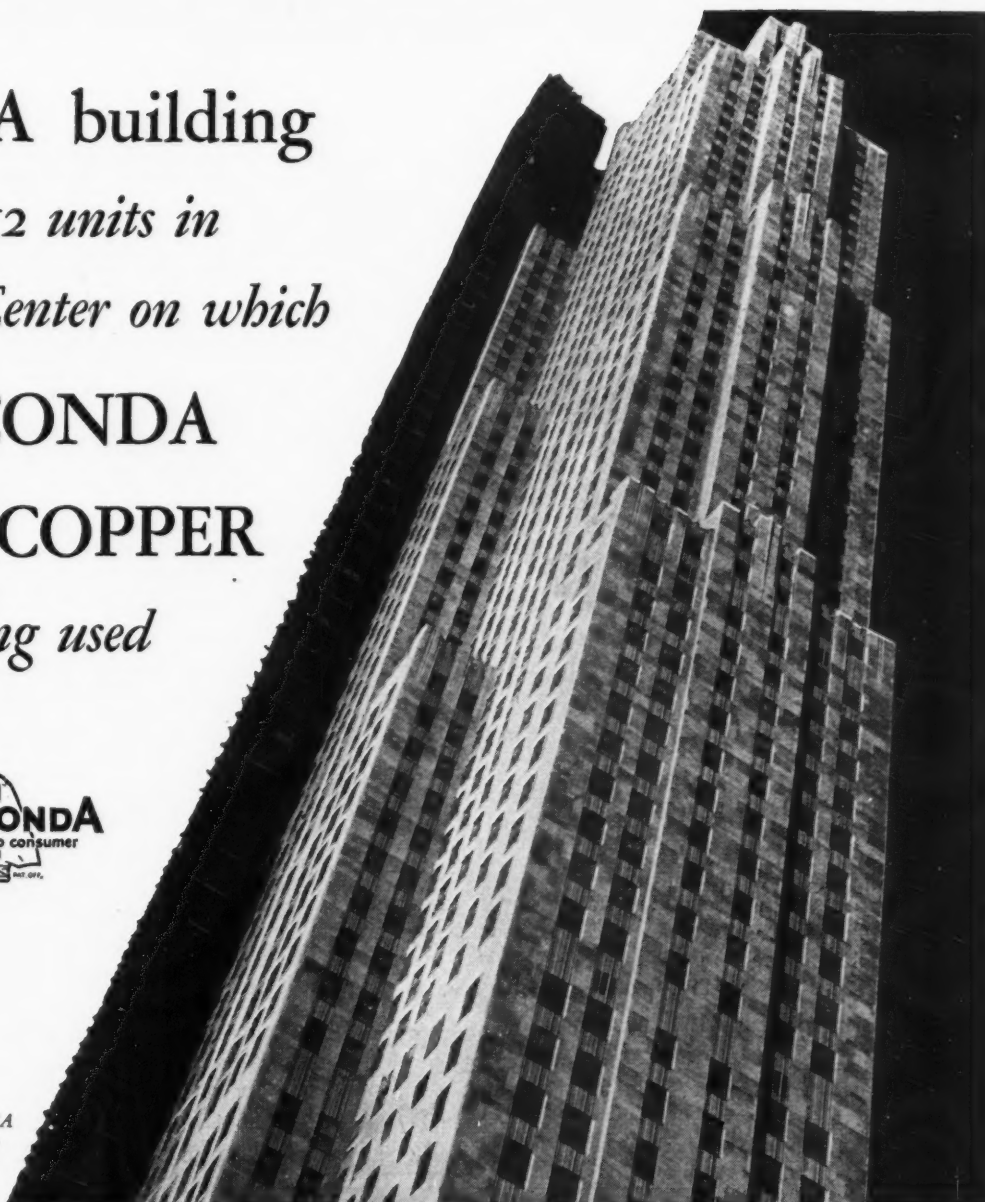
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The RCA building
one of 12 units in
Rockefeller Center on which
ANACONDA
SHEET COPPER
is being used



Measured by floor area, the new RCA Building is the largest building in the world. Its 70 stories tower 853 feet above the sidewalks of New York.



Architects: Reinhard & Hofmeister; Corbett, Harrison & MacMurray; Hood & Foulboux. General Contractor: Hegeman-Harris Co. Sheet Metal Contractor: Liberty Sheet Metal Works.

IN THIS monumental structure and in the other 11 units of Rockefeller Center . . . "the greatest private development in America" . . . Anaconda Sheet Copper is being used exclusively. Both plain and lead-coated copper were required for signs, flashings and roof metal work. What more can we say about the quality of Anaconda Sheet Copper than that it meets every requirement of Rockefeller Center?



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"Gee! I've been workin', Boss. It's these case hardened wood screws that won't work. Every time I start drawing 'em up the threads strip off. I used three screws in one hole before I got one to stick."

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here is
more than
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THE GLOBE IRON ROOFING & CORRUGATING COMPANY, Cincinnati, Ohio

**SHEET METAL
BUILDING PRODUCTS**



Somebody made Money

...ON THESE MONEL METAL JOBS

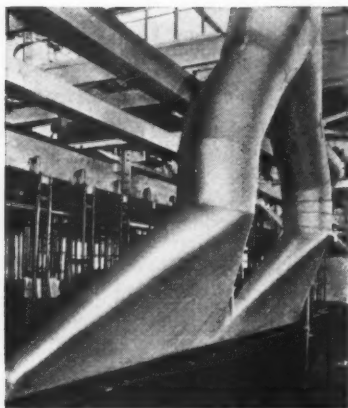
● Want to make some real money this year? Want to make new customers and increase your sales to old ones? Then take a tip from sheet metal contractors who have specialized on Monel Metal* equipment!

They will tell you that practically every home, factory, restaurant, store and public building in your community is a prospect for Monel Metal in some form.

They'll also tell you that you can make a worthwhile profit on every Monel Metal job, because intensive national advertising over a period of years has made your customers familiar with the outstanding merit of Monel Metal. They already know that when it comes to beauty, rust-immunity, corrosion-resistance, cleanability and durability, Monel Metal is in a class by itself... it's unique! No other available material offers such a combination of time-and-money-saving properties.

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● The rapidly growing popularity of Monel Metal kitchen equipment offers alert sheet metal men a rare opportunity to sell the vast home market.



THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

An Announcement

An Announcement

Beginning with this March issue, AMERICAN ARTISAN takes over the publication of Furnaces and Sheet Metals and Warm Air Heating.

Furnaces and Sheet Metals, first published in 1921, covered practically the same field as AMERICAN ARTISAN while Warm Air Heating, begun in September, 1928, was devoted exclusively to the heating field.

AMERICAN ARTISAN, now entering its fifty-third year of continuous publication, has progressed step by step with the furnace and sheet metal industries from the days of the horse and wagon "tinner" and the Franklin stove, through the days of the cornice and first gravity "code" installation and is now prepared to lead the way in air conditioning, ventilation, the use of sheet metal for houses and commercial structures and general warm air heating.

Because AMERICAN ARTISAN has so thoroughly covered all the varied activities of these great industries, changes in editorial policy are not required because of this absorption of two other papers. Readers are, however, assured of the continuance of all special departments, features and activities of the two absorbed magazines. We welcome as readers of AMERICAN ARTISAN, former readers of Warm Air Heating and Furnaces & Sheet Metals.

This merger places upon the shoulders of AMERICAN ARTISAN enlarged and specific responsibilities and necessitates sound editorial policies and leadership of high caliber.

To this service AMERICAN ARTISAN pledges itself.

Consider Credits

Attention has been forcefully called at this year's conventions to the importance of watching credits. This watchfulness should

cover both extension of credit to customers and the maintenance of business credit with supply houses and manufacturers.

Too much attention and emphasis cannot be given credits during times like these. As one speaker recently said—if you give long time credit to your customers you make yourself a banker, which is outside your line of activity. At the same time, unless you have ample finances, you cut down your payments to your supply houses and ask them to wait because you

are waiting. This hurts your credit and increases costs all along the line.

In most communities contractors are asking customers to pay down sufficient money to cover the cost of materials used. This protects the contractor's credit with his sources of supply and reduces the possible percentage of loss. Should the customer kick at having to pay cash for materials, that should be a pretty good sign that the customer is not a good credit risk.

With time payments decreasing throughout all merchandising fields we should realize that the man asking for unwarranted credit has some motive which will not work to our advantage. True, there are always unusual circumstances, but unless the contractor knows all the details and trusts his own judgment, unwarranted credit request should be looked at with suspicion.

We should all realize that credit control applies to our entire field. The manufacturer and the distributor should be just as careful in their credit extension as the individual contractor. As a nation we have paid well for our credit leniency during boom years. Many of the costs and losses which we are now writing down or off were accumulated while our eyes were shut to the pitfalls of easy credit.

If we, as individuals, can sell only when credit is easy to extend, then we are overlooking the dozens of services which can be sold for cash. While these services—cleaning, repairing, painting, replacement of parts, addition of accessories—do not individually represent as large an amount as a new plant they can be made to return a fair living and profit for the effort expended if intelligently handled.

Selling Gadgets

There has been this past winter and will be this coming summer a flood of gadgets for the furnace system. Many of these, sad to say, are only sales

items and really add nothing to the operation, efficiency or satisfaction of the system.

We realize, as an industry, that to survive we have to sell. The pitfall lies in our trying to sell a gadget which will only harm us in the end, when we might more profitably devote this energy to selling real service. Such service lies in the sale of cleaning, controls, humidifiers, fans, better circulation, new registers and such established items. Let us fight free of the idea that a saleable item is necessarily a new gadget.

A Welded Sheet Steel Roof

This roof unique in design and erected by unusual methods in Albany, N. Y. demonstrates the growing adaptability of sheet metal to present day fabrication methods • • • • •

WORKING high above the ground like so many human flies, a crew of welding operators recently laid 60,000 lineal feet of welds to complete what are said to be the first self-supporting welded sheet steel roofs in the country. This was at Albany, N. Y., where the roofs were erected on four huge grain elevators built by the New York Port Authorities for the Port of Albany. Welding and erection of the roofs were done by the J. K. Welding Co., New York City.

If precedents in the construction of grain elevators had been followed, the areas covered by the roofs would have been left open—their usefulness would have been extremely limited. Instead, engi-

neers decided to cover these areas with watertight roofs, making available additional storage space for grain or other materials. Furthermore, they planned a self-supporting roof, without columns, stanchions or purlins so that the maximum storage space would be obtained. The roofs which they designed were simple in construction and erection and represented a decided economy over the ordinary type.

The plan of the roofs is novel. Each measures 288 feet wide with a total span of 140 feet, and forms a catenary curve supported only at the top and bottom of the roof. Seventy-six sections of 12-gauge mild steel sheets, 140 feet in length and 50 inches wide, compose each roof.

The lower part of the roof starts on a ramp, approximately 22 feet above the ground level, and extends upward at an angle between 30° and 40°. Both the top and bottom ramps were constructed at an angle to conform with the slope of the roof.

Steel was ordered in lengths of 5 feet, 10 feet and 31 feet, 3 inches and each section assembled and welded on the ground.

Five sheets formed a section. These were fitted end to end in a jig and four of the seams butt welded. The last seam was lap welded, the lap weld being tack welded on the underneath side on completion of the section. It was necessary to place one lap weld in each section to compensate for any



"Human-fly" welding operators average 40 to 50 feet of lap welds per hour on 12 gauge steel in fabricating suspended steel roofs. Each operator employed a sheave block and fall to hoist himself



Hoisting one of the 3700-pound roof sections in place

expansion and contraction caused by welding of the butt seams. Thus all finished sections were exactly the same in length.

At the ends of each section were two rows of $\frac{7}{8}$ -inch bolt holes. The outside rows were used for erecting purposes and the inside rows for anchoring to the upper and lower supports. A yoke of $\frac{1}{2}$ -inch steel was bolted to one end of the steel section about to be erected. To this was attached a steel cable running through a sheave at the top of the upper roof platform and thence downwards to a hoisting engine on the ground level. As the section was hoisted upwards it was first guided to the top of the wall by inclined supporting channel members; thence, as it crossed the ramp, it slid over two cables stretched from

the bottom of the roof to the top at a distance of about 36 inches apart.

A bar with two U-bolts welded in place so that they would pass over the two cables, was bolted to the roof section to serve as a guide while hoisting.

At the edges of the ramps were anchored $\frac{7}{8}$ -inch bolts. As the sections were hoisted into place, the inner row of holes in each section was fitted over the bolts in the concrete.

In erecting, alternate sections were first anchored, leaving a gap of 46 inches. Then the intermediate sections were put in place lapping two inches on each side. These sections were erected without the use of cable guides. Instead boards were held in place across the

gap while the sheets were being raised.

In order to hold the expansion and contraction to a minimum and to prevent unevenness in the plates in joining them, considerable tack welding was employed. After all sections had been tack welded in place, continuous welds were laid along each seam. The step back method was used to dissipate the heat and prevent distortion. Small expansion joints were welded in place over the longitudinal seams at every tenth seam, giving the roof free expansion and a floating characteristic. These joints were of 14-gauge steel running one-half the length of the seam. They were staggered on the upper side and the lower side of the roof.

On completion the roofs were given two coats of red lead and one coat of aluminum paint, thus protecting the steel from the weather. Eight cowl type ventilators were placed on each of the four roofs. All welding was done by the shielded arc process using equipment manufactured by The Lincoln Electric Company, Cleveland, Ohio. The electrodes were $\frac{5}{32}$ -inch with a current of 150 amperes at 32 volts were used. The speed of welding averaged forty to fifty feet per hour with a total of eight operators. Welding operators were required to pass the procedure welding test in accordance with requirements of the state laws.

More than 400 tons of steel were used in the construction of the roofs which were built under the supervision of the New York State authorities.

The photograph used on this month's cover shows one of the sheets used on this roof being raised into position. Sections of the continuous strip were welded on the ground and raised in alternate sections as shown. The alternate sections were slid up on cables. Then the fill-in section was slid up the two previously raised sections and tack welded. Ingenious fabrication, erection and welding made this job possible.

Lets Figure a Job

By Platte Overton

Using The New Tentative Code For Forced Air Heating

[Part II]

OUR next problem is the location of returns and we place one or more returns in all rooms except garage, bath and kitchen. Returns are sized in the same manner as supplies. However, in our problem we must increase our volume and the number of our returns due to the fact that our supply air to the garage is lost and cannot be returned. This means that the "lost" air must be replaced by infiltration so we locate our returns near doors and windows.

For our problem we may safely average the location of the returns and make them all one size. Our total basic factor for item 24 equals 86.90. Our total returns equal 10, thus we have 86.90 divided by 10 equals 8.69. The code in Article 2, Section 9 (b) informs us that for the design of return air ducts we may follow the same procedure as given for warm air supply as covered in Article 2, Section 3 to 7 inclusive. Hence we use the basic factor 8.69 and multiply it by 3.6 for our return air pipe size and we have; 8.69 times 3.6 equals 31.28 square inches of pipe area and we find these equivalent to a round pipe 6.3 inches in diameter. We would no doubt make these pipes 6 inches in diameter for convenience.

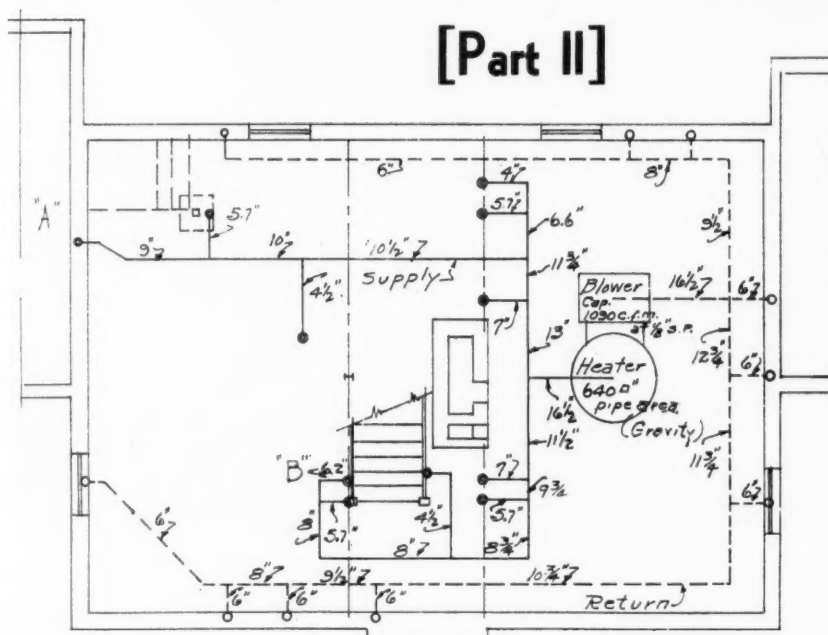


Fig. 4. By making a simple basement piping plan like the above you can gather your branches together and get your round pipe sizes all accounted for

Our return grilles will be located in the baseboard and will be the width of the stackhead or 10 inches. For height we follow the rule for registers below breathing line level and we have the basic factor 8.69 times 6 equals 52.14 equals 75% of 70 square inches or return register 102X7. Our return stacks from the second floor are the equivalent of 6-inch round duct or 10 X 3 1/2 inches (Table 4). We are now ready for our trunk line sizes.

On our basement plan Fig. 4, we draw in the lines that indicate the location of our proposed trunk line and branches. The return branches and trunk line is also indicated. For our sizes we start at the far end of the trunk line at "A". As we have already calculated the individual round pipe sizes for each register or stack these may be indicated on the plan as taken from the data sheet. Our far or end run is the garage (105) and the round pipe size (item 31) is 9 inches. Our next branch is to the bed room on the second floor (202) and is given on the data sheet as 5.7 inches in diameter of round pipe. When these two branches are combined we reduce the trunk size that supplies them by 10%.

Wherever two or more ducts join, the duct that supplies them shall be 10% less than their combined areas. In the following tabulations the trunk line is sized to the right and the calculations are worked out for the reader. Hence, we have Table A:

Table A

Garage=9'x6.6'	63.6	square in. area	
Second Floor Bed Rm.=5.7'x25.5'	25.5	square in. area	
Total	89.1	square in. area	
Less 10%	8.91	square in. area	
Total	80.19	square in. area	10 in. dia. round duct
Kitchen=4 1/2'x15.9'	15.9	square in. area	
Total	96.09	square in. area	
Less 10%	9.6	square in. area	
Total	86.49	square in. area	10 1/2 in. dia. round duct
Bath & Bed Room=6.6'x34.2'	34.2	square in. area	
Total	120.69	square in. area	
Less 10%	12.06	square in. area	
Total	108.63	square in. area	11 1/4 in. dia. round duct
Living Rm.=7'x38.5'	38.5	square in. area	
Total	147.13	square in. area	
Less 10%	14.71	square in. area	
Total	132.42	square in. area	13 in. dia. round duct

We now start from the end of the other trunk line at "B" and our first calculation is made on the dining room duct and from the data sheet we see that this run is 6.2 inches. Hence:

Dining Room=6.2"=	30.2	square in. area
Second Floor Bed Rm.=5.7"=	25.5	square in. area
Total	55.7	square in. area
Less 10%	5.57	square in. area
	50.13	square in. area=
Hall=4½"=	15.9	square in. area
Total	66.03	square in. area
Less 10%	6.60	square in. area
	59.43	square in. area= 8¾ in. dia. duct
Second Floor Bed Rm.=5.7"=	25.5	square in. area
Total	84.93	square in. area
Less 10%	8.49	square in. area
	76.44	square in. area= 9¾ in. dia. duct
Living Rm.=7"=	38.5	square in. area
Total	114.94	square in. area
Less 10%	11.49	square in. area
	103.45	square in. area=11½ in. dia. duct

equal 86,900 divided by 136 equals 640 square inches of pipe area. This is of course the gravity rating.

For the blower size: The blower capacity shall be the sum of the c. f. m. required for all the rooms.

The total of item 25 equal to 1090 c. f. m.

Controls: Here we quote direct from the code—

Section 3. Controls.

(a) An adjustable, automatic furnace switch should be placed in the bonnet of the furnace to start and stop the blower at predetermined temperatures. Under average conditions it should be set to start the blower at from 130 to 175 degrees and to stop it at from 100 to 130 degrees.

(b) A manual switch for summer control should be placed in the hallway, stairway or other accessible location, but should not be placed where it is liable to be turned by mistake. This switch should be so wired in conjunction with the automatic switch in the furnace casing that the blower cannot be stopped when the furnace is hot.

We must now combine one 13-inch round duct and one 11½-inch for our connection to the furnace and we have—

sq. in. area	
13 in.=132.42	
11½ in.=103.45	
Total	235.87
Less 10%	23.58

212.29=16½ inch round duct

These round ducts may be changed to equivalent rectangular ducts by the use of Table 4. Our basement depth is 7'-6" with an 8" steel beam extending below the joists leaving us 6'-10" in the clear for ducts and head room. As we desire 6'-4" in the clear below ducts we must confine our ducts to 6" in depth where they pass under beams. However they may be 8" deep until it is necessary to pass under the beams. Hence from Table 4 we have; starting from the end of the trunk at the heater.

16½ in. round duct	=	31x8 Rect. duct
13 in. round duct	=	18x8 Rect. duct
7 in. Branch	=	5x8 Rect. duct
11½ in. Trunk line	=	14½x8 Rect. duct
6.6 in. Branch	=	4¾x8 Rect. duct
10½ in. Trunk line	=	11½x8 to 16x6 Rect. duct
4½ in. Branch	=	3x6 Rect. duct
10 in. Trunk line	=	14x6 Rect. duct
5.7 in. Branch	=	4¾x6 Rect. duct
9 in. Trunk line	=	11½x6 Rect. duct

The opposite trunk line is sized similarly.

For the furnace size: Article 3, Section 1 (a) "Multiply the house basic factor (total of all rooms item 24) by 1000. This gives the B. t. u. loss from the rooms heated. Divide this by 136 to obtain the Standard Code pipe area rating for gravity. Hence we have 86.90 times 1000

TABLE NO. 4
EQUIVALENT ROUND AND RECTANGULAR DUCTS FOR EQUAL FRICTION

Side of Rect. Duct	2½	3	3½	4	4½	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Diameter of Equivalent Round Pipe																				
8.....	4.7	5.2	5.7	6.1	6.5	6.9	7.6	8.2	8.8											
8½.....	4.9	5.4	5.9	6.3	6.7	7.1	7.8	8.5	9.1	9.6										
9.....	5.0	5.5	6.0	6.5	6.9	7.3	8.0	8.7	9.3	9.9										
9½.....	5.1	5.7	6.2	6.6	7.1	7.5	8.2	8.9	9.6	10.2	10.7									
10.....	5.2	5.8	6.3	6.8	7.2	7.7	8.4	9.2	9.8	10.4	11.0									
10½.....	5.4	5.9	6.5	7.0	7.4	7.8	8.6	9.4	10.0	10.7	11.3	11.8								
11.....	5.6	6.0	6.6	7.1	7.6	8.0	8.8	9.6	10.2	10.9	11.5	12.1	12.6							
11½.....	5.6	6.2	6.7	7.2	7.7	8.2	9.0	9.8	10.5	11.2	11.8	12.4	12.9	13.4						
12.....	5.7	6.3	6.9	7.4	7.9	8.3	9.2	10.0	10.7	11.4	12.0	12.6	13.2	13.7						
12½.....	5.8	6.4	7.0	7.5	8.0	8.5	9.4	10.2	10.9	11.6	12.2	12.9	13.5	14.0						
13.....	5.9	6.5	7.1	7.7	8.2	8.7	9.6	10.4	11.1	11.8	12.5	13.1	13.7	14.3						
13½.....	6.0	6.6	7.3	7.8	8.3	8.8	9.7	10.6	11.3	12.1	12.7	13.4	14.0	14.6	15.1					
14.....	6.1	6.7	7.4	7.9	8.6	8.9	9.9	10.8	11.5	12.3	12.9	13.6	14.3	14.9	15.4					
14½.....	6.2	6.8	7.5	8.1	8.6	9.1	10.1	11.0	11.7	12.5	13.2	13.9	14.6	15.1	15.7	16.2				
15.....	6.3	6.9	7.6	8.2	8.7	9.2	10.2	11.1	11.9	12.7	13.4	14.1	14.7	15.3	16.0	16.6				
15½.....	6.4	7.0	7.7	8.3	8.9	9.4	10.4	11.3	12.1	12.9	13.6	14.3	14.9	15.6	16.2	16.8	17.3			
16.....	7.1	7.8	8.4	9.0	9.5	10.5	11.4	12.3	13.1	13.8	14.5	15.2	15.8	16.5	17.1	17.6				
17.....	7.3	8.1	8.6	9.2	9.8	10.8	11.8	12.6	13.5	14.2	15.0	15.7	16.3	17.0	17.6	18.2	18.7			
18.....	8.2	8.8	9.5	10.0	11.1	12.1	13.0	13.8	14.6	15.4	16.1	16.8	17.4	18.1	18.7	19.2	19.8			
19.....	9.1	9.7	10.3	11.4	12.4	13.3	14.2	15.0	15.8	16.6	17.2	17.9	18.6	19.2	19.8	20.4	20.9			
20.....						10.5	11.6	12.7	13.6	14.5	15.4	16.2	17.0	17.6	18.4	19.0	19.7	20.3	20.9	21.5
21.....						10.8	11.9	12.9	13.9	14.9	15.7	16.5	17.4	18.0	18.8	19.5	20.1	20.8	21.4	22.0
22.....						11.0	12.1	13.2	14.2	15.2	16.1	16.9	17.8	18.5	19.2	19.9	20.6	21.3	21.9	22.5
23.....						11.2	12.4	13.5	14.5	15.5	16.4	17.3	18.1	18.9	19.6	20.4	21.1	21.7	22.4	23.0
24.....						11.4	12.6	13.8	14.8	15.8	16.8	17.6	18.5	19.3	20.0	20.8	21.5	22.2	22.8	23.5
25.....						11.6	12.8	14.0	15.1	16.1	17.0	17.9	18.8	19.6	20.4	21.1	21.9	22.6	23.3	24.0
26.....						11.8	13.1	14.3	15.4	16.4	17.3	18.3	19.2	20.0	20.8	21.6	22.3	23.0	23.8	24.4
27.....						12.0	13.3	14.5	15.6	16.7	17.6	18.6	19.5	20.4	21.2	22.0	22.7	23.5	24.2	25.0
28.....						12.2	13.5	14.8	15.9	17.0	18.0	19.0	19.8	20.7	21.5	22.4	23.1	23.9	24.6	25.3
29.....						12.4	13.7	15.0	16.1	17.2	18.2	19.2	20.0	21.0	21.9	22.7	23.5	24.3	25.0	25.7
30.....						12.6	13.9	15.2	16.4	17.5	18.5	19.5	20.5	21.4	22.2	23.1	23.9	24.7	25.4	26.2
31.....						12.7	14.1	15.4	16.6	17.7	18.8	19.8	20.8	21.7	22.5	23.4	24.2	25.0	25.8	26.6
32.....						12.9	14.3	15.6	16.9	18.0	19.1	20.1	21.1	22.0	22.9	23.8	24.6	25.4	26.2	27.0
33.....						13.1	14.5	15.8	17.1	18.2	19.3	20.4	21.4	22.3	23.2	24.1	25.0	25.8	26.6	27.3
34.....						13.2	14.7	16.1	17.3	18.5	19.6	20.7	21.7	22.6	23.5	24.4	25.3	26.2	26.9	27.7
35.....						13.4	14.9	16.2	17.5	18.7	19.8	20.9	21.9	22.9	23.8	24.7	25.6	26.5	27.2	28.1
36.....						15.1	16.4	17.7	19.0	20.1	21.2	22.2	23.2	24.2	25.1	26.0	26.9	27.7	28.5	29.3
37.....						15.2	16.6	17.9	19.2	20.3	21.4	22.4	23.4	24.4	25.3	26.2	27.1	28.0	28.8	29.6
38.....						15.4	16.8	18.2	19.4	20.6	21.7	22.7	23.7	24.7	25.6	26.5	27.4	28.3	29.1	30.0
39.....						15.5	17.0	18.4	19.6	20.8	21.9	23.0	24.1	25.1	26.1	27.0	27.9	28.8	29.6	30.5
40.....						15.7	17.2	18.6	19.8	21.1	22.2	23.3	24.4	25.4	26.4	27.3	28.2	29.1	30.0	30.9
41.....						15.9	17.4	18.8	20.0	21.3	22.4	23.5	24.6	25.6	26.6	27.5	28.4	29.3	30.2	31.1
42.....						16.1	17.6	19.0	20.2	21.5	22.6	23.7	24.8	25.8	26.8	27.7	28.6	29.5	30.4	31.3
43.....						17.8	19.2	20.5	21.8	23.1	24.2	25.3	26.4	27.4	28.4	29.3	30.3	31.2	32.1	33.0
44.....						18.0	19.4	20.7	22.0	23.3	24.4	25.5	26.6	27.6	28.6	29.5	30.5	31.4	32.3	33.2
45.....						18.2	19.6	20.9	22.2	23.5	24.6	25.7	26.8	27.8	28.8	29.7	30.7	31.6	32.5	33.4
46.....						18.4	19.8	21.1	22.4	23.7	24.8	25.9	27.0	28.0	29.0	30.0	31.0	31.9	32.8	33.7
47.....						18.6	19.9	21.3	22.6	23.9	25.0	26.1	27.2	28.2	29.2	30.2	31.2	32.1	33.0	33.9
48.....						20.1	21.5	22.8	24.1	25.4	26.5	27.6	28.6	29.6	30.6	31.5	32.5	33.4	34.3	35.2
49.....						20.2	21.7	23.0	24.3	25.6	26.7	27.8	28.8	29.8	30.8	31.7	32.7	33.6	34.5	35.4
50.....						20.4	21.9	23.2	24.5	25.8	26.9	28.0	29.0	30.0	31.0	32.0	33.0	33.9	34.8	35.7
51.....						20.6	22.1	23.4	24.7	25.9	27.1	28.2	29.2	30.2	31.2	32.2	33.2	34.1	35.0	35.9
52.....						20.8	22.3	23.6	24.9	26.2	27.4	28.5	29.5	30.5	31.5	32.5	33.5	34.4	35.3	36.2
53.....						20.9	22.4	23.7	25.0	26.3	27.5	28.6	29.6	30.6	31.6	32.6	33.6	34.5	35.4	36.3
54.....						21.1	22.6	23.9	25.2	26.5	27.7	28.8	29.8	30.8	31.8	32.8	33.8	34.7	35.6	36.5
55.....						21.3	22.7	24.0	25.3	26.6	27.8	28.9	29.9	30.9	31.9	32.9	33.9	34.8	35.7	36.6



This is the cover of Smasco's sheet metal building catalogue

SHEET metal contractors, both large and small, have found that one good thing coming out of depressed business conditions is the necessity which forces them to go out and "drum up" work. As a matter of fact we all know that in practically every town a part or all of the contractors are now "making" work where three years ago they were content to sit and hope.

That such solicitation and thinking is both profitable and possible is being proved all over the country and the proving is bringing to light really unusual business building ideas.

For instance, there is the Southwestern Sheet Metal and Supply Co. of Phoenix, Arizona, who have exhausted every possible avenue of work, discarding some as unprofitable but retaining those which make money.

W. T. Harmonson, president of the company, in casting around for work, discovered that in his part of the country sheet metal filling stations were practicable and, for him, profitable. So he launched into the fabrication of such houses.

Sales Program

Names of prospective purchasers were secured from the oil companies, who gladly co-operated. Then Harmonson engaged a draftsman to design several alternate types of buildings he could easily fabricate in his shop. A salesman followed up the leads, and closed a number of sales, encountering very little resistance, for he was competing with buildings of brick or concrete erected by various tradesmen working under general contractors. The sheet metal jobs were fabricated under one roof by one trade, and

SMASCO Builds Sales With Sheet Metal Buildings

By A. B. Laing

rushed to the job ready for erection.

Mr. T. H. Heenan, a general contractor whose masonry buildings have been passed by in favor of metal, says:

"I've given up figuring service stations. I can't compete with sheet metal."

Harmonson took a lesson from the most successful merchants of buildings—the mail order firms. He patterned his selling plans after theirs, by preparing a book illustrating the buildings he had to sell. But he improved on the mail order firm's methods inasmuch as his plan book is compiled from *actually completed buildings*, not "canned cuts" or artist's sketches. Thus his sales weapon is double-barreled. It carries the punch of local testimonials welded to display matter. The name of every owner appears prominently in the photograph of each building.

The Southwestern Manufacturing and Supply Company, as the booklet says is—"the outgrowth of a very small beginning in 1913. The business has grown until it has become highly departmentalized. This catalog illustrates one phase of our business only. In these pages one can fully inform himself as to the



Southwestern Manufacturing and Supply Co., has developed a large line of metal buildings for roadside stations. This is a filling station. These metal buildings have virtually eliminated other types of buildings in Smasco's territory

type of vending stations, gasoline and oil service stations, wash racks and similar service units which he might need. Naturally, this book does not describe all the styles of this kind of building which we manufacture, but offers many valuable suggestions. Just as we have achieved front rank among the

building trades as manufacturers of ventilating systems for all types of buildings, we are proud of our record as manufacturers of service station units. Please use our staff of engineers in helping you plan your buildings for the greatest efficiency and attractiveness."

Harmonson has harnessed the

printed word to assist his salesmen. He says:

"This service station business has helped to straighten our sales curves, and fight off seasonal depressions. More business means less overhead, consequently we can figure lower on other sheet metal jobs of a competitive nature."



This is an interior view of the Smasco shop. Some idea of the variety of work handled may be gained by the work scattered around—a skylight job on the floor, metal signs for motor coach stations, pipe for heating plants, etc.

Go After the Industrial Plant

Sales letters, a circular, and postal card copy to create business in community plants

IN THE February issue we carried the first of two articles, together with selling copy, to be used in approaching large and small manufacturing plants in the contractor's community with a view to putting over the idea that this is a good time to undertake sheet metal work.

In this issue we carry the second of these articles, including copy for two circulars, two sales letters and two postal cards. It should be kept in mind, of course, that all of this copy may be used for various purposes. If it happens that the contractor is partial to the idea of using postal card mailings, all he has to do is to take the copy here and break it down into the various sales points, using one point to a card. Or he may wish to increase the number of sales letters to more than two. In that case, he can use the two suggested letters here and then draw on the other copy for further ideas.

It should be noted that all of this copy is related—each piece of copy being designed to support the others in the series, and all of it aimed at the same objective, tying in also with the copy which was given in the February issue.

In that issue we referred to the fact that there is an organized movement on foot to induce owners of manufacturing plants to undertake rehabilitation now. Following is a newspaper item, released in New York under date of Feb-

ruary 5: "Rehabilitation projects aggregating \$155,049,702 have been undertaken throughout the country, the national committee on industrial rehabilitation announced today. A. W. Robertson chairman of the committee and chairman of Westinghouse Electric and Manufacturing Company, said the total

represents work planned or undertaken in response to the committee's activities.

"The last previous announcement showed a total of \$142,115,351 on January 15. These projects cover a wide range in industrial plants and retail establishments which keep in contact with the committee. 'It

Your Letterhead

Dear Sir:

The national committee on industrial rehabilitation reports that more than \$155,000,000 worth of such work in manufacturing plants and other business institutions has been undertaken within the last five or six months. This work was not, we believe, undertaken with any overly-optimistic views as to overnight recovery—but we do believe it represents the minimum of repair and rehabilitation work which executives have felt necessary in order to keep their plants in readiness for efficient, economical production.

Demand is accumulating and its satisfaction is going to put production facilities under the same strain they felt when called upon to furnish the accumulated demands of the war period. Pressure for quick deliveries is going to be strong and plants which, under the heavy orders, find it necessary to delay shipments because buildings or equipment are not in shape, will lose business.

What we are suggesting to the manufacturing plants of this community is this: Let us send a man to inspect the sheet metal work in the plant. A full report and recommendations will be furnished you on all applications of sheet metal inside and outside of the plant. Such work as is necessary can then be scheduled in accordance with your other plans.

There are literally hundreds of places around a plant where sheet metal can be used economically. We are prepared to perform all of the necessary designing, fabricating, erecting and repairing operations in any of the various metals. A telephone call will bring a competent man to talk over the matter with you and to make any inspection desired.

Very truly yours,

ENTERPRISE SHEET METAL WORKS.

One of the sales letters in the campaign

Remodel with Sheet Metal!

Before undertaking any remodeling or repair work around buildings, large or small, consider whether or not that work can be done more economically with sheet metal.

Just now, the cost of such work is lower than it has been for years

THE advantages of sheet metal work are many. Special fabrication to meet special needs, quick delivery and installation in Tin, Galvanized Iron, Copper, Lead-coated Copper, Aluminum, Zinc, Monel Metal and all kinds of alloy steels, lead—as well as heavy plate for boiler breechings, etc. We are equipped for forming, cutting, punching, shearing, welding, soldering, patching, repairing in any of these metals, with experienced workmen, experienced designing skill, and experience in meeting a variety of special demands. In a word, a complete sheet metal service for large or small jobs.

WE are, of course, prepared to furnish such industrial demands as machine guards, oil drip trays, shaving boxes, etc. But beyond these there are many larger uses which may contribute to the efficient operation of a business. Quickly and economically we can fabricate and erect the extra garage that may be needed, or the shelter which will retard deterioration in equipment used out of doors. Strategically located tool houses may be fabricated at minimum expense with sheet metals. Checkers', sheds and shipping platform canopies can be put up inexpensively in sheet metal. For the inside of the plant, we are prepared to set up or repair collecting systems of any kind, piping systems, to replace or repair hoods or tanks and do the necessary soldering or patching.

Or, if you have a special need which can be met with sheet metal fabrication—telephone us. A competent man will call upon you and discuss your ideas with you.

ENTERPRISE SHEET METAL WORKS

122 E. Main St., City

Phone 0000

is not a matter of vital importance as to where the credit for each rehabilitation project rests,' Mr. Robertson said. 'It is important to know that the movement for modernization is progressing nationally and having a beneficial effect on business and employment.'"

In our viewpoint, it doesn't make much difference to the contractor what his ideas may be concerning the present situation. He may think that we are on the way out, or he may think that we are not. All that is beside the main question: What is he doing to keep his own

A circular or envelop stuffer addressed to industrial plant executives

business going? If he is busying himself, as he should be, with an attempt to study his community with a view to locating those businesses and individuals who have money to spend and can be induced to spend it with him, the whole national problem, for him, is solved, because for each of us the first and most important problem is our own. As we solve that one, we contribute to the solution of the larger problems.

Regrets for the easy business of

the boom years; regrets for what might have been or what we might have done have no place right now. The way to healthy business for the individual is the old and simple one of work and thrift. Work, under present conditions, means merchandising. It means contacts with the public, it means the exertion of all the ingenuity a man commands to sell the goods and the service he has to offer. A man may not like to make evening calls—but they are a part of the order of the day. He may even dislike all that is meant by merchandising—

personal selling, preparation of advertising material, the routine of following up prospect leads—but he has no choice. The retailer who sustains himself during the next few years is going to do so by the process of merchandising. He must work—and he must work in the way that people have learned to recognize as effective in business.

That's the imperative side of the picture. There is a more pleasant side, of course. There is some satisfaction in creating a piece of business, in recognizing the need of a customer and in satisfying that need. And there are customers who have needs and who can satisfy them. The one hundred and fifty-five million dollars' worth of rehabilitation work undertaken since the committee started work gives some indication of what can be done when there is a determined will back of the effort.

For work of the type which the sales material accompanying this article is aimed at, it is necessary for the contractor to study his community to inform himself of the degree to which the various plants are operating and the possible needs they may have had their attention called to by the rehabilitation campaign, or by the fact that the work must be done.

The endeavor in the copy used for the two circulars and for the two sales letters is to place the idea of remodeling with sheet metal before these plants in the light of an economical investment, both because prices are lower and because of the service offered. We have gone back to the idea, used in February, of listing the various kinds of metal in which the contractor works, and the various operations he is prepared to perform, and we have pointed out the justification for the various types of work suggested.

To the list of plants which the contractor has, or which he makes up for the purpose, we suggest the sending of the circulars or the letters, or both. In addition to these, or as a separate campaign, we would suggest the following copy for two

postal cards. If used as a part of the other campaign material, these cards would serve as light jabs to keep interest alive. If used separately, the number of cards can be increased by using material taken from the sales letters and the circulars. Here is the copy for the first card:

Is yours one of the plants undertaking rehabilitation? \$155,000,000 is being spent by manufacturing plants and other business all over the country as part of the national movement to put plants in shape for efficient, economical production.

In considering rehabilitation, there will be many things that can be done more economically with sheet metal. We'll be glad to show you how.

Phone 0000

ENTERPRISE SHEET
METAL WORKS

11 Main Street CITY

Copy for the second card would be as follows:

\$155,000,000 spent for Plant Rehabilitation. Will yours be one of the plants ready to take up efficient, economical production in response to the demand that is daily piling up?

If you are undertaking any remodeling — consider sheet metal. There are many places where it will be the most economical, quickest and satisfactory material with which to work.

Phone 0000

ENTERPRISE SHEET
METAL WORKS

11 Main Street CITY

The individual contractor who continues to merchandise aggressively may not become wealthy in the next few months, but he will certainly be in a position to "go to town" when business is on the up-trend.

Your Letterhead

Dear Sir: .

Is yours one of the plants identified with the movement to rehabilitate which has resulted in something over \$155,000,000 of such work being undertaken?

No man can predict, of course, just what is going to bring about a definite turn in the course of business. But we have the experience of the post-war period to show us that the demand which is now being piled up will, when the credit dam is finally broken, swamp our production facilities. Two major industries experienced just that thing last fall.

Nothing can be more annoying than to know that business is to be had which must be turned down, or delayed in shipment, because equipment and buildings, under the stress of production demands, begin to show neglected needs.

In considering the task of placing your plant in shape for the efficient production which will be demanded, we urge that you do not overlook the many economical uses to which sheet metals may be put. We are prepared to take care of work in any of the metals, and to perform all necessary designing, fabricating, erecting or repairing operations,—to become, in short, a division of your own organization ready to take on any job, large or small.

Even though you may feel that you have no immediate needs for this type of service, may we suggest an inspection of the sheet metal work in your plant with a view to giving you a memorandum of advisable work to be undertaken at your convenience? A telephone call will bring a competent man to make the inspection.

Very truly yours,

ENTERPRISE SHEET METAL WORKS.

Another sales letter to officials of manufacturing plants

Bodily Comfort

[Part III]

By L. W. Millis

A series of articles presenting in plain language useable sales points which your customer can understand. The contractor will find the answers to most of the comfort questions raised by prospects.

THE capacity of the air to absorb heat through evaporation brings us to the most important part of this subject. The capacity of the air to absorb moisture from the body varies over a wide range according to the temperature of the air and the amount of moisture it contains when it comes in contact with the skin or clothing. You have noticed that on some summer days, when the thermometer says 90° you were not very uncomfortable. On other days with the thermometer only 80, you were quite uncomfortable. Of course, you said it was due to humidity. It will be worth our while to get a clear idea of why this is so.

Strictly speaking, we should not think of air as carrying moisture. Moisture is a condition of space and temperature independent of the air. However, air and moisture travel together out in the open spaces, and it is customary with most of us to speak of humidity as a property of air. We will therefore do so in this case.

Air at zero can contain in round numbers $\frac{1}{2}$ grain of moisture and no more; therefore, we call it 100%

or absolute saturation. If the same quantity air be warmed to 15 degrees and we add as much moisture as it can carry it will contain 1 grain. If we add no moisture it will contain only the original $\frac{1}{2}$ grain which, of course, is 50% of its capacity and is called 50% relative humidity. If we warm the air another 15 degrees or to 30 degrees, it can contain 2 grains. If we add no moisture to the original $\frac{1}{2}$ grain, the relative humidity will be 25%. Let us jump to 70 degrees. It can then contain 8 grains. If we add nothing to the original $\frac{1}{2}$ grain it will have a relative humidity of $6\frac{1}{2}\%$. If we wish to add enough moisture to bring 1000 cu. ft. of such air up to 40%, relative humidity, we must add 6 pints of water.

Suppose on a summer day the air is 80 degrees and that the relative humidity is 60%. Such air surrounding our bodies would not be very thirsty. It would absorb the perspiration rather slowly and would tend to form a sort of aerial envelope around our bodies. The contents of the envelope would be hot, moist air incapable of absorb-

ing much more heat. We have assumed that no loss by radiation is taking place. If this condition continues for even a few minutes the human mechanism is certain to collapse. If, however, there is sufficient movement of air to break up the envelope and keep a constant flow of new air capable of absorbing more moisture, the human mechanism can continue to function.

In the winter the reverse conditions prevail. Our bodies are surrounded by relatively cold walls of glass and other materials. The radiation loss from our bodies is therefore large. Even if the outside air has a high relative humidity, it becomes just the opposite when warmed to higher temperatures. It demands moisture from our bodies. We therefore find it practical to add moisture to the air to prevent such large evaporation loss from our bodies. In addition, we raise the temperature of the air.

Engineers through thousands of tests have determined pretty exactly what our physiological responses to heat are. Their results are shown below.

PHYSIOLOGICAL RESPONSES TO HEAT OF MEN AT REST AND AT WORK

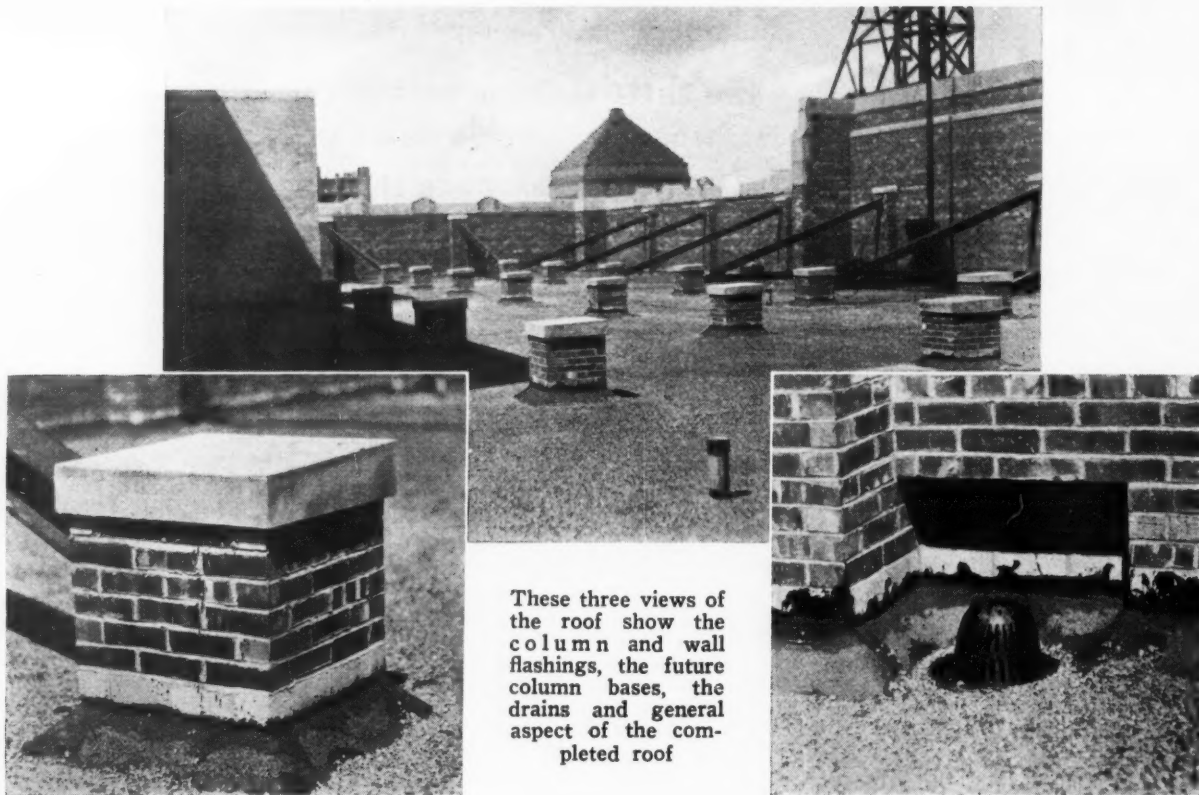
Men at rest

Men at Work

A.S.H.V.E. Guide 1932 Eff. Temperature 0	Act. Cheek Temperature	Increase in Pulse Rate per Minute (1 hr. test)	Loss in Weight by Evaporation Grains	Loss in Pints	Ft. Lb. Work Accomplished	Rise in Temperature Degrees (1 hr. test)	Increase Pulse Rate per Minute (1 hr. test)	Loss Weight Evaporation Grains	Loss in Pints
60	0	0	0	0	225,000	0.	6	3,500	.47
70		0	1,400	.19	225,000	0.1	7	4,200	.56
80	96.1	0	2,100	.28	209,000	0.3	11	5,600	.74
85	96.6	1	2,800	.38	190,000	0.6	17	7,700	1.04
90	97.	4	3,500	.47	153,000	1.2	31	10,500	1.42
95	97.6	15	6,300	.85	102,000	2.3	61	14,000	1.90
100	99.6	40	11,900	1.63	67,000	4.0	103b	18,000	2.43
105	104.7	83	18,000	2.43	49,000	6.0b	158b	24,500b	3.32
110		137b	28,000b	3.80	37,000	8.5b	237b	30,800b	4.18

b Test time less than 1 hour.

Table arranged from data by A. S. H. & V. E. Laboratory.



These three views of the roof show the column and wall flashings, the future column bases, the drains and general aspect of the completed roof

A 20-Year Bonded Built-up Roof

THE new Equipment and Office Building of the Indiana Bell Telephone Company in Indianapolis, completed several months ago, but still in process of being occupied, was designed by the architects to take advantage of present conditions to secure a structure which incorporates the best and latest in materials, practices and engineering thought.

Although the building is one of the most impressive in downtown Indianapolis, provision for future expansion has been made by designing the structural frame heavy enough to carry several additional floors. This provision for future stories necessitated a number of interesting features in the design and application of the insulated, built-up roof and the accompanying protective measures.

In general design, this present roof, which may later become a floor, consists of a reinforced con-

Laid on a deck which may later be an interior floor, without any slope whatever and broken throughout by column stubs. These characteristics made waterproofing difficult and hazardous. The construction has met every test.



crete slab covered with insulation against heat loss and heat penetration, a twenty-year bonded roof and certain interesting adoptions of flashing application.

The application of the roof proper and the built up and metal flashing was included in one contract awarded to the Henry C. Smither Roofing Co., of Indianapolis.

The Roof

Because this roof may be a floor, the entire surface is perfectly level

without any slope, excepting very slightly toward drains located around the parapet walls. The roofing material was laid according to Barrett specifications for a type "A-A" (4-ply) roof over concrete.

Into the first mopping of pitch a two-inch thick layer of cork board was laid, using slabs full two inches thick and butt joints. On top of the cork board the four-ply roof was laid, lapping the sheets 24½ inches over each preceding sheet and giving a full pitch coating to every part of the sheet covered.

A heavy mopping of pitch tops the felt with a 400-pound layer of gravel spread into the hot top mopping.

Because of the provision for additional floors structural columns are carried through the roof and cut off as stubs above the roof proper. These columns are completely bricked in and capped with a stone section for prevention of

moisture penetration. These enclosures (as shown in one of the photographs) are square in shape. A special flashing block was set into the brick work 5 inches above the roof level and the roof is carried up in a self flashing cant into this flashing block.

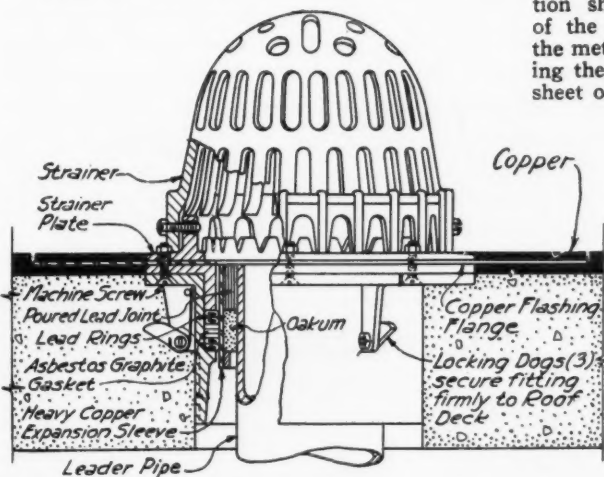
A cross section detail of this construction is shown. The cork is not carried up this cant but the thickness of the roof on the cant is increased by the use of layers of plastic gum between the felt sheets.

An identical method of construction is used where the roof meets the base of the parapet walls and the walls of the pent house. In the photographs showing these two details, the extra precautions to get a heavy mopping of pitch into the flashing block and over all seams is indicated.

To flash the outside walls and the numerous column stubs some 1450 lineal feet of flashing block were required.

Drainage

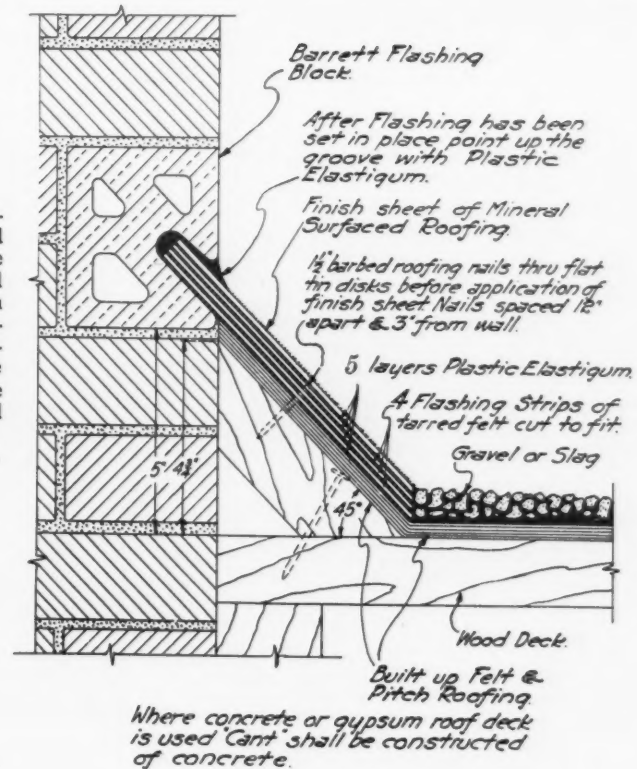
Because the roof is perfectly



level, it is anticipated that water will stand upon the roof until evaporation carries the water away. In order to insure that too much water will not remain on the roof, however, sumps connecting with inside drain pipes are placed at intervals around the parapet walls.

In design, these sumps consist of a heavy iron bell strainer bolted to the collar of the drain pipe and water-proofed with a wide sheet of copper used as a washer between the gaskets. One of the details

The wall flashings are formed by carrying the roofing material up "cants" which end at the opening to the flashing blocks. The felt layers on the cant are separated by heavy gum

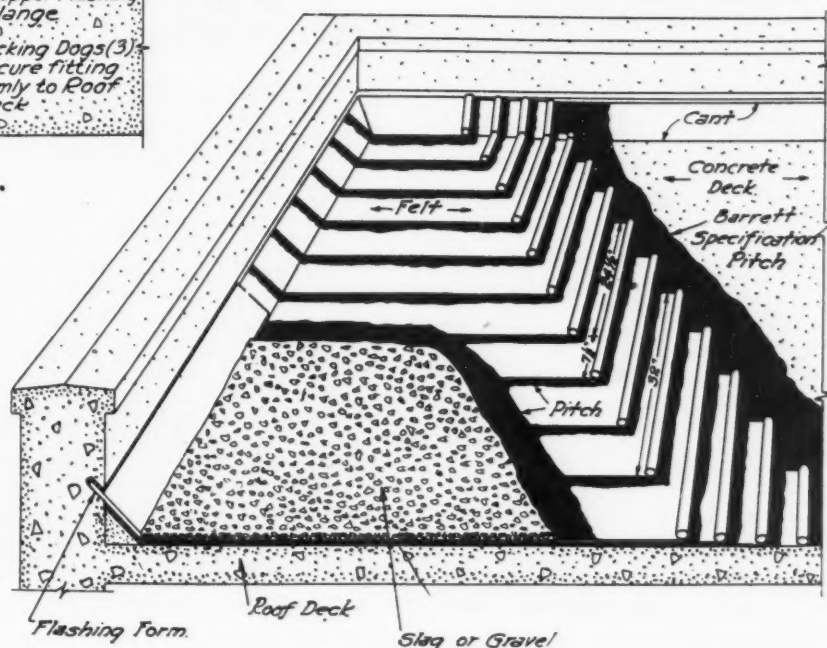


shows a cross section of the sump construction, while one of the photographs shows how the sump is located in relation to the wall and the roof area.

Wall Flashings

The brick wall beneath the stone coping is protected against moisture penetration by a special thru-wall flashing formed in the Smither shop. One reason for forming this flashing specially for the building was the design which called for an overhanging drip three inches wide,

Below is shown the construction of the twenty-year bonded roof





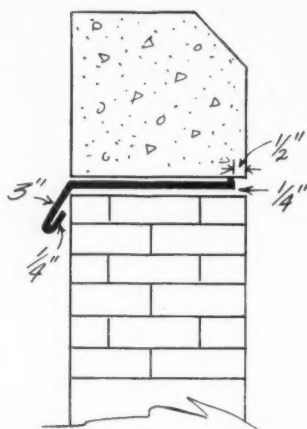
The walls, directly below the masonry coping are flashed with through wall copper flashing installed as shown in the photograph above

stiffened along the outer edge with a turned under fold.

It was also thought desirable by the architect to keep the wall edge of the flashing inside the finished wall line, which required another 90 degree turned up edge $\frac{1}{4}$ -inch high.

The flashing is directly beneath the masonry cap and was placed there so that when future curtain walls are added the present brick work can be used if desired.

The flashing was formed as shown in one of the details in sections 45 inches long with mitred



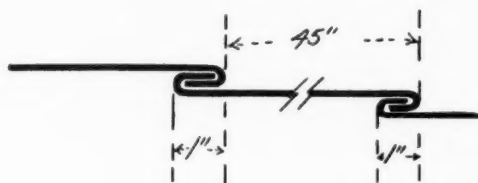
sections for the corners. In all cases, even the mitres, the sections are joined with a loose lock 1-inch wide. The flashing was formed in 16-ounce, crimped copper, the

crimped being selected for additional bond and as additional protection against movement of the stone cap. The entire flashing sheet except the outside drip is embedded in the mortar bed of the stone cap.

More than 920 lineal feet of this through wall flashing was required for the job.

These precautions against water penetration were considered essen-

The fabrication of the through wall flashing was handled as shown in the drawing below. This type of shop made flashing was selected because of certain wishes of the architects



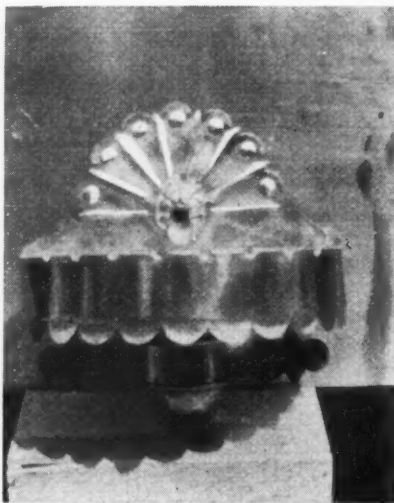
16oz. Crimped ($\frac{3}{16}$ ") Soft Copper

tial by the architects and owners in view of the construction and the many places where leakage might occur unless water tightness was guaranteed.

Hand Made Fountains Are Saleable

A GARDEN wall fountain of beaten copper, introduced in the Los Angeles area by the Pioneer Heating and Sheet Metal Works, 109 South Jackson St., Glendale, California, is proving popular.

The first fountain of this kind was installed by this firm for J. P. Power, wealthy resident of Alta Canada, a Los Angeles suburb. This particular fountain was made partly of 32-oz. and partly of 16-oz. sheet copper. The bowl is twenty inches in diameter and the perpendicular part nineteen inches high. The metal was polished and antiqued before being installed and the additional ap-



pearance of age comes from the green corrosion showing immedi-

ately after water has run over the surface. This fountain cost the present owner about forty-four dollars, which price would, of course, vary in other installations in proportion to the amount of hand hammering necessary to produce the design.

In all the copper fountains notches around the top edge of the bowl allow the overflow to trickle over the edge and a fluted and scalloped edge at the bottom spreads the falling water out to more or less of a spray.

Great variety in design is of course possible.

The Wisconsin Convention

DESPITE a blizzard which blanketed Wisconsin and the central states in heavy snow the first day of the convention, one hundred and forty-three registrations were entered for the nineteenth annual convention of the Sheet Metal Contractors of Wisconsin. This registration surpassed that of 1932 and places Wisconsin in the running with Indiana as an association able to bring out an attendance despite business conditions or the weather.

Credit for this excellent turnout must be given the officers who gave so freely of their time all during the last twelve months and to the members who showed an appreciation for the benefits of association membership.

The program of this 1933 meeting surpassed that of past years in the general practicability of the talks. Speakers were selected for their knowledge of the subjects assigned and subjects of importance were chosen.

Whereas the first morning, February 6, was devoted to meetings of committees, the afternoon session opened with a full program of addresses with F. H. Clausen of the



George Bishoff, President

Van Brunt Manufacturing Co. talking on "Operation of the Unemployment Insurance Law."

Mr. Clausen has been identified with the development of this Wisconsin law for many years and is, probably, the best qualified man in the state to discuss all the angles of the proposition which directly affect the small manufacturer and independent contractor.

Mr. Clausen explained the beginnings of the law in 1921 and listed some of the effects produced by the law. These effects are:

1. Two per cent is levied against every employer of four men or more.

2. Although the employer has no control over general business, the levy goes on regardless of profits.

3. Whereas the company lays aside a reserve for stockholders, depending on profits, the insurance levy must be met regardless of earnings and takes no money from labor's earnings.

4. Because of the tax, employers attempt to get along with as few mechanics as possible and at as low rates of pay as possible.

The law as perfected becomes effective July 1, 1933. As the law now stands every employer of four men or more pays the 2 per cent tax. The collections are sent to the Industrial Commission, which places

all monies in a common fund which is invested and paid out as needed.

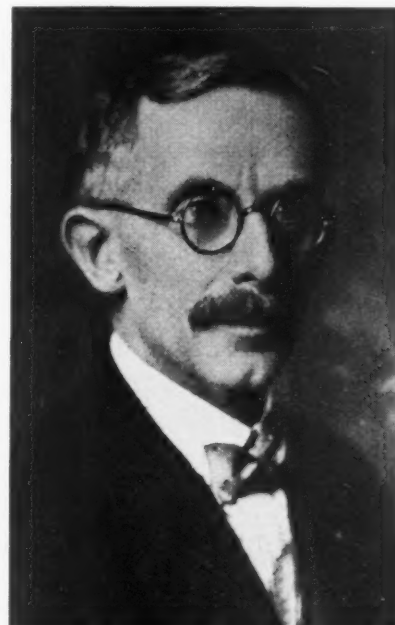
Every employee becomes eligible for compensation after July 1, 1934. He must have worked for two weeks if he is a mechanic or for one month if he is a salaried man. If injured he receives not less than five dollars a week for the hourly man and ten dollars a week for the salaried man. Payment begins two weeks after injury and can be paid out for not more than ten weeks.

If an employer does not wish to operate under this law he can meet state requirements by guaranteeing 42 weeks of work a year. There are, stated Mr. Clausen, numerous sub-rules and regulations designed to cover every contingency but many of these sub-rules must be further clarified or changed.

"The Future in the Remodeling of Old Homes" was the subject discussed by C. M. Riefkin, Newport Rolling Mills, Newport, Ky. Mr. Riefkin's talk was based upon the remodeling of a typical, low rental cottage near the company's plant in which an entirely new outside and interior, all of sheet metal, was used to cover and line the house. The results obtained with metal were



Paul Biersach, Secretary



Alfred Goethel, Treasurer



C. F. Goldstone, Third V. P.

shown by large photographs taken before, during and after remodeling. These photographs were especially interesting because of the fact that every item was formed on equipment usually found in the smallest shop and was fabricated and applied in sections easily handled.

Some of these photographs will be shown in a later issue. The interesting points are that the siding, the window and door frames, the interior partitions, ceilings, walls, doors, all were covered with metal.

The finished house was opened to visitors who came from all parts of the country to view the results. More than 2,700 visitors have been through the house. Some surprising results were obtained. For example, on a summer day when the temperature was in the hundreds, the interior temperature was 16 degrees below the outside temperature. On a winter day inside temperatures were 16 degrees above outside temperature. This, despite the fact that the house is not occupied and there is no fire in the winter time.

The complete remodeling cost about \$300 a room for the complete job.

The first speaker on Tuesday morning was G. H. Hamrich of the Certainteed Products Co., Milwau-

kee, who advocated sheet metal contractors getting into all types of built up and composition roofing. Whereas in years gone by most sheet metal contractors did slate, shingle and built up roofing, the last few years have seen many such contractors leaving this field, he stated.

1933, said the speaker, will be a year of roof remodeling. There are hundreds of roofs in every community which require new shingles or new built up roofing. These are not being covered because money is tight and there is not enough responsible contractors actively soliciting work.

Because home owners, building owners and architects are demanding undivided responsibility for both roofing and sheet metal work, there is a splendid opportunity right now, declared Mr. Hamrich, for the aggressive sheet metal contractor to capitalize on this demand and secure the increased profits which come from taking the whole contract.

D. C. Ellison of the Northwestern Stove Repair Co., Chicago, speaking on the subject, "Business Trends for the Furnace Dealer," said: "Today our greatest problem is price cutting and the only satisfactory solution is courage—courage to refuse to sell at prices which eliminate profit, which jeopardize



A. Schumann, Second V. P.

credit and lead to poor collections. Manufacturers and jobbers have been just as ready to cut prices as have the individual contractor.

"The firm which enters competition with the slogan, 'We Undersell,' is a poor firm to tie up to. Most of these firms underpay their help, their merchandise is cheap, they do not advertise, they give no service, they live but to die.

"Sad to say, only a small percentage of our dealers and jobbers really know what profit is. They guess. Their books are guess-work. They depend on selling to carry the business. To succeed we must know ourselves, our business, our credits, our customers, our employees, our own abilities.

"We should not expect a boom to bring us out of this depression. We should realize that success is based upon the following points:

1. A bargain is a bargain only if it satisfies.
2. The American buyer places value above price.
3. Trade reliability is our most powerful weapon.
4. Cutting prices makes business only for the manufacturers of red ink.
5. Quality and price must go hand in hand—not singly.

"Remodeling will be our future big market. And air conditioning is our entering wedge in the fight to get our share of the two billion dollar remodeling budget. Air con-

OFFICERS FOR 1933

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Sergeant—Palmer Hanson, LaCrosse.

ditioning seems likely to be the field which will replace the automobile, the electric refrigerator, the radio, but who will control this market remains to be seen."

"Credits and Collections" was the subject W. J. Joy, Republic Metals, Inc., Chicago, discussed. This address will be published later.

G. A. Voorhees, Indianapolis, Indiana, presented a short discussion on the new code for mechanical installations. He handed out sheets with a typical installation, also a data sheet filled in for the

design of the system. In the short time allotted, Mr. Voorhees explained how the code was put together, explained how the factors used should be selected and applied, how trunks are sized and equipment selected. Practically all of this discussion has been covered in articles by Mr. Voorhees appearing in past issues of *AMERICAN ARTISAN*.

A very interesting discussion of filters was given by Q. G. Ewen, Independent Air Filter Co., Chicago. Mr. Ewen showed the prog-

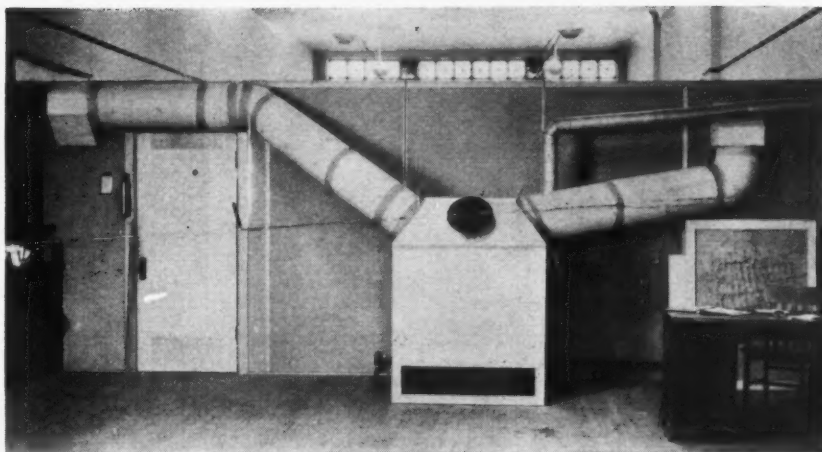
ress in filter development and the various types of filters now in use for domestic, commercial and industrial use by means of lantern slides. He discussed each type, pointed out its particular advantages and answered numerous questions on filter application.

"How to Regulate This Mechanical Work," and "How to Sell Air Conditioning" were discussed by John F. Japp, Cook Electric Co., and I. W. Rowell of the Lakeside Company. These addresses are published in a later issue.

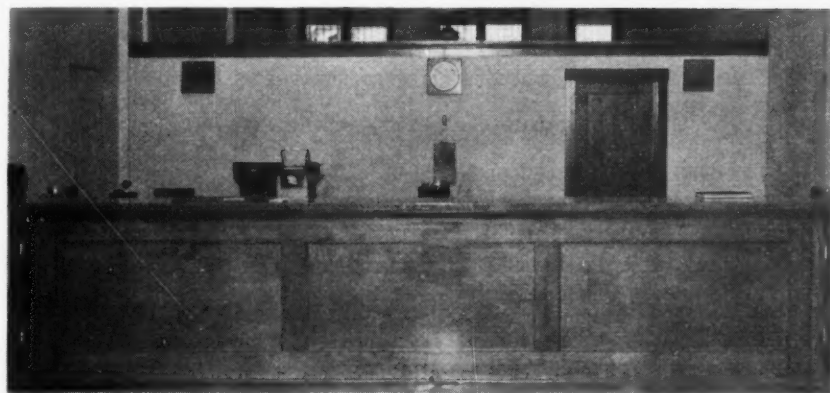
A No-Basement System For A Small Office

INSTALLING a gas-fired basement furnace on the first floor of a small office building which ordinarily would require two circulating heaters, solved a heating problem in a way which was both economical and efficient.

The installation was made in the building of the Pacific Gas & Electric Co. at Sanger, Calif. There is no basement so it was decided to install a basement furnace on the street level floor, substituting it for two circulating heaters. It was



The gas furnace is located behind the partition with two leaders to the faces shown from the office. The casing heats the work room



placed midway in the room, just behind a partition separating the customer's counter from the clerical department.

Two ducts to the partition discharge warm air on each side of the room at an elevation eight feet from the floor. These are designed to

provide for the front part of the room. The rear of the office is heated by warm air direct from the furnace, no duct being used.

The cost of the equipment used in this set-up was about 30 per cent below the estimated cost of two circulating heating units originally

planned for heating the two rooms. A feature of the heating is the even distribution of warm air. The temperature is practically the same in all parts of the room, even within a few feet of the furnace. The casing of the furnace does not become hot, making it possible for employees to work beside it without discomfort. The plant is entirely automatic. A telechron turns on the furnace at six in the morning and by 8 o'clock the office is comfortably warm. A thermostatic control maintains an even temperature of 70 degrees.

Shop Fabricated Airplane Hangars

WE publish, elsewhere in this issue, suggestions for a campaign to sell special buildings used by industry which can be economically fabricated from sheet metal.

The point often overlooked by the contractor is the fact that such a solicitation can very well advocate

using sheet metal for practically every type of building. If this thought is kept in mind the contractor will find his sales field very much wider.

A case in point is the fabrication and erection of small hangars large enough for one airplane designed and built by the Biersach and Nie-

dermeyer Company of Milwaukee. These small hangars are located on the municipal airport and are either sold or rented to individuals having a plane.

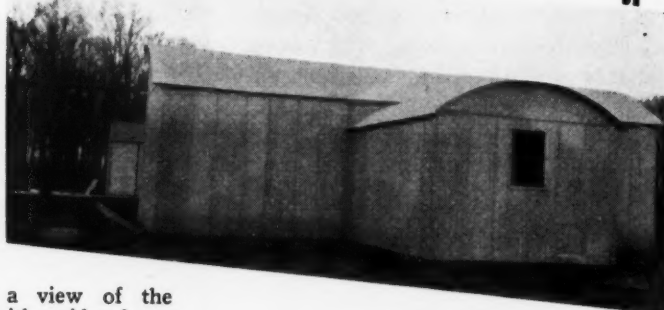
Little explanation is needed to point out the fabrication and construction of these buildings as the photographs tell the story.



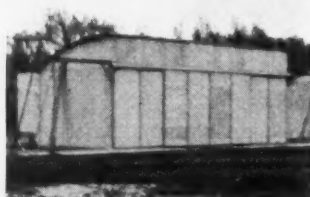
The first hangars were made of flat sheets, standing seams but the same general design



Every sheet was cut to fit in the shop

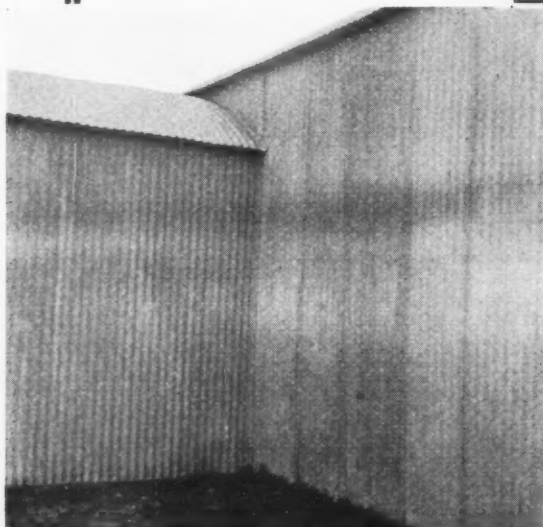


Below a view of the front with wide doors

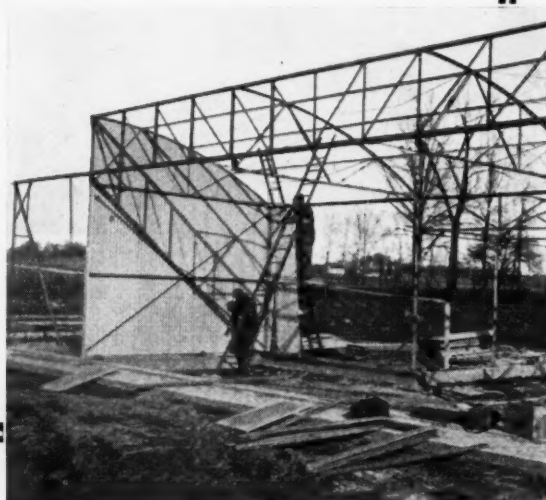


Each hangar houses one plane. Corrugated sheets, lapped and riveted, constitute the sheathing

Below is shown the angle iron frame and the two-man crew assembling sheets on an end



Left is a close-up of a side showing the rounded roof sheet and eave





Automatic Heat *and* Air Conditioning Section

OF all the impractical conceptions held by the public about air conditioning—no one idea is more in error than the idea that cooling for residences is all there is to air conditioning.

. . . . We, as an industry, have come to realize that cooling is a nice subject to talk about, but a very good subject to steer clear of unless we are prepared to defend prices far above heating costs. We know, but the public doesn't, that cooling costs money, both for initial installation and for operation.

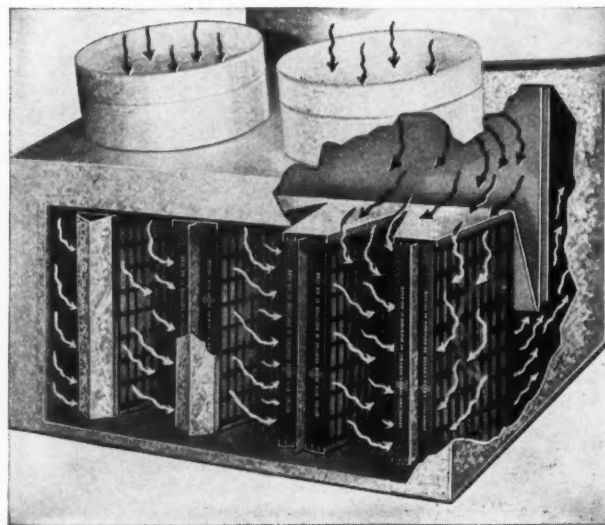
. . . . We should expect to see next cooling season a flood of gadgets sold as cooling devices which our experience and research at Urbana will plainly show to be both impractical and outrageous.

. . . . As an industry, we should conduct a campaign to debunk cooling so that when this service becomes practical we will be an industry looked to for advice and not an industry criticized because we sold the public a gold brick.



This

is your gold mine of opportunity



Owens Illinois combination furnace casing and filter boot equipped with battery of eight "Dustop" filter units. Free passage of air is permitted in the return air pipe, through the filters and into the

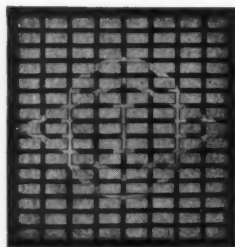
furnace. Warm air circulated by system is thus freed of dust and dirt. The "Dustop" gravity furnace casing has been adopted by nearly a score of leading furnace manufacturers as standard equipment.

● Now, for the first time, dealers in warm air furnaces can *outdemonstrate* and *outsell* every other method of heating. With one swift stroke the new Owens-Illinois combination furnace casing and filter boot has swept aside the objections to warm air furnace heat and has lifted it to a new high plane of efficiency, cleanliness, and healthfulness.

This newest of Owens-Illinois developments opens up a big, waiting market for you. It gives you exclusive sales advantages

over *all* competition. For now you can sell an inexpensive filter-equipped gravity furnace which circulates clean, healthful air.

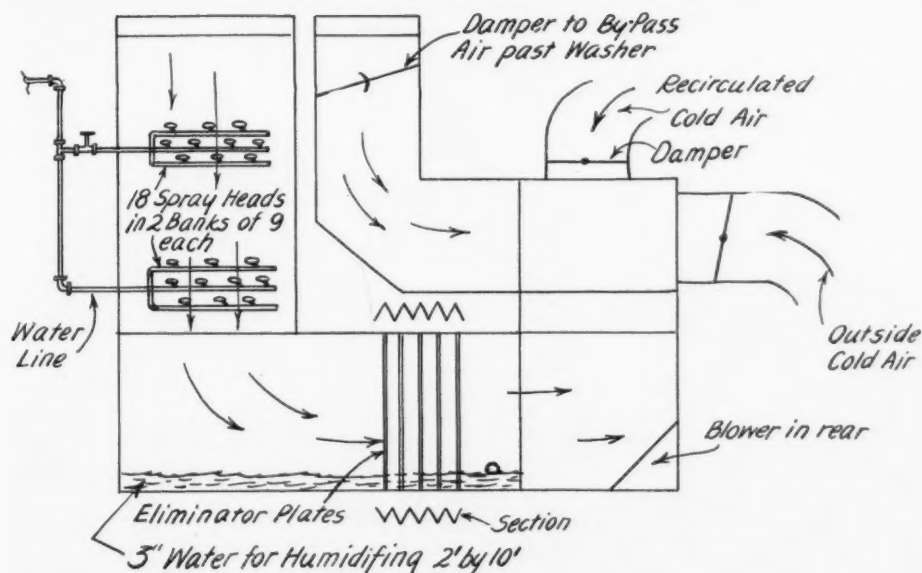
Here is your golden opportunity to capitalize on the great public interest in filtered air, and to meet your customers and prospects face to face with the most perfect low cost heating system of the day.



For full particulars write or telegraph Owens-Illinois Glass Company.. Industrial Materials Division, Toledo, Ohio.

The "Dustop" glass wool filter unit cleans air more efficiently at less cost than any other filter on the market. It is the outstanding accomplishment in air filtration.

OWENS - ILLINOIS
AIR FILTERS



The drawing to the left shows the sequence of arrangement of sprays, humidifying pan, eliminator plates and blower with the return air system. The photograph below shows the actual installation

A Remodeled Job Which Provides Conditioned Air

THE remodeling and replacement of existing unsatisfactory heating systems to give the home owner air conditioning is recognized today as the largest and most active field of operation for the air conditioning dealer.

This contention, put forth by contractors all over the country, is readily understood when we visualize the thousands of furnace systems which are unsatisfactory because of age, deterioration, changed interior needs or the growing appreciation of the benefits and comforts secured by conditioning the air.

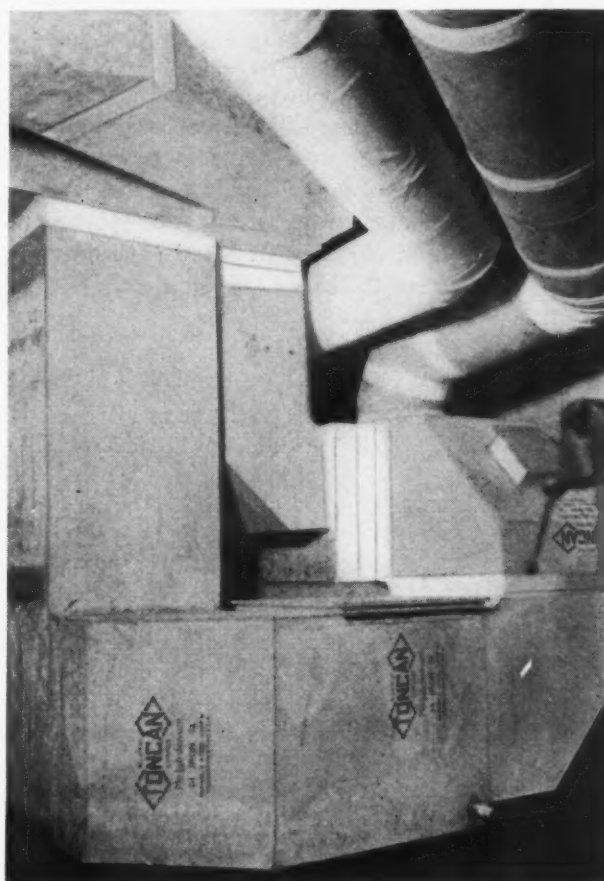
With the wide variety of equipment and our present knowledge of handling air, the dealer can give the owner any degree of conditioning and practically any type of system at almost any cost of installation and operating expense.

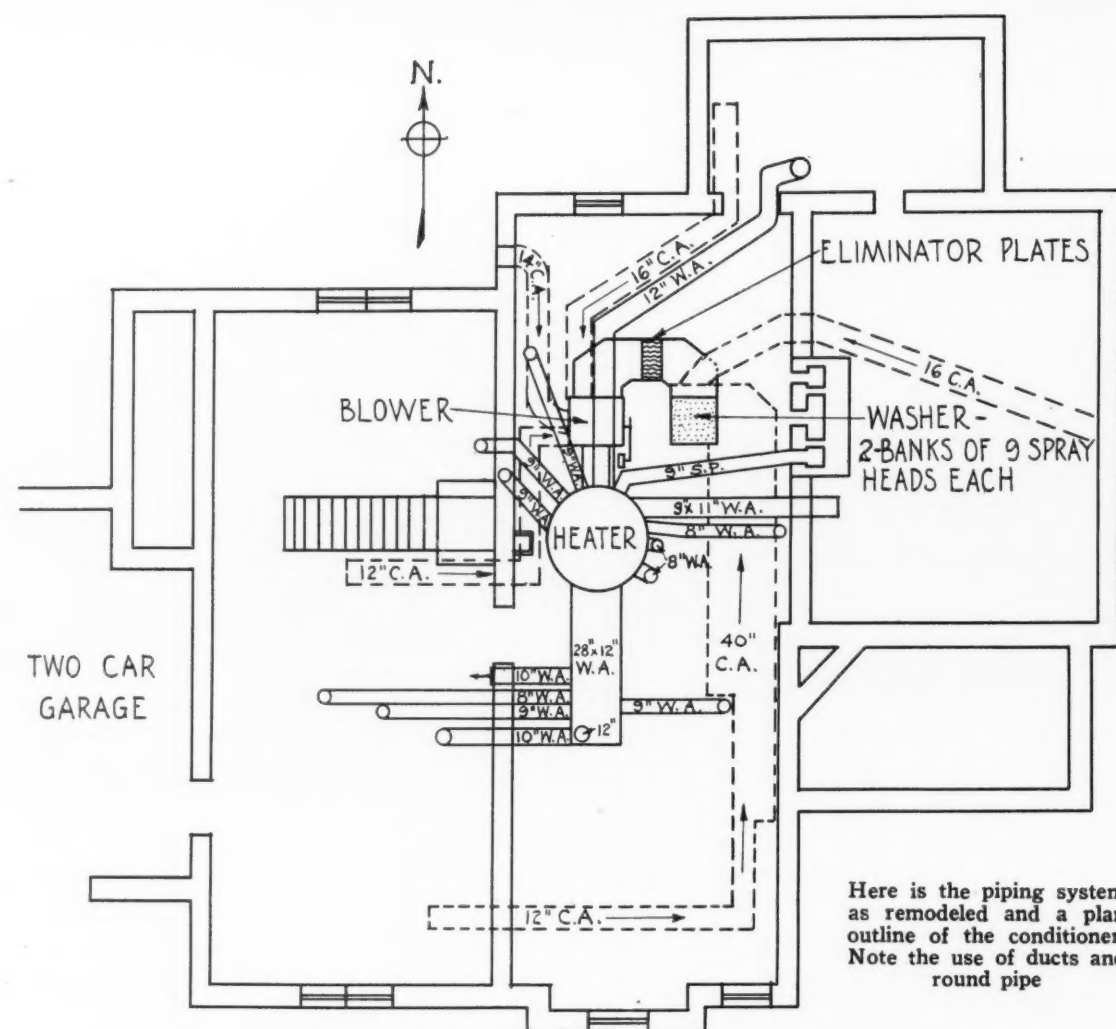
An excellent example of remodeling to provide interior conditioning was installed in the heating season of 1931-1932 in the home of Mr. G. B. Waldon by the L. C. Thiele Company of Indianapolis, Indiana.

The original installation consisted of two furnaces, each with an oil burner, arranged in a battery and working on gravity. The revised plant was designed by the Thiele company in conjunction with Mr. Waldon who, as a chemist, has a deep interest in domestic conditioning and enough basic knowledge to understand what can and can't be secured and what is required to give the conditions desired.

One large furnace especially designed for economical oil burning is used in the new plant. To this furnace is attached a conditioning unit especially designed for the system and composed of several unique arrangements of equipment. The basic plan of the

system is complete control of inside air in both winter and summer. That the system functions according to the predetermined plan is attested to by Mr. Waldon who reports that every condition imposed has been met satisfactorily.





Basic Design

The house, as shown in the exterior photograph, is a large brick structure with an exposed sun room and living room. The total heat loss for the house is 143,504 B.t.u. per hour. There are thirteen rooms in the house with each room except the living room supplied from a single register. Room designations, sizes, exposures and calculated C.F.M. for heating are shown in the table below.

First Floor				
Kitchen:	N.W. Expos.	8'8" x 14'7" x 9'	116 C.F.M.	
Sun Room:	N.W.E.	8' x 15'		
	(1 story)		246 C.F.M.	
Dining:	N.	14' x 14'	95 C.F.M.	
Living:	N.E.S.	14'7" x 20'		
		(1 story)	219 C.F.M.	
Living:	E.S.	13' x 16'	130 C.F.M.	
Bed Room:	S.W.	12' x 12'10"	79 C.F.M.	
Bath:	E.	5' x 7'	25 C.F.M.	
Hall:		24' x 7'	95 C.F.M.	
Second Floor				
Bed Room:	N. & E. Expos.	12' x 14' x 8'	116 C.F.M.	
Bed Rm.:	N. & W.	8'8" x 14'	116 C.F.M.	
Bath:	E.	8' x 8'	39 C.F.M.	
Bed Room:	S.W.	12'6" x 12'10"	78 C.F.M.	
Bed Room:	S.E.	12' x 13'	68 C.F.M.	

In changing over to the new plant all existing stacks, registers and returns were used without alteration. The system is designed to provide circulation according to the table above:

The system was designed to pass air through the basement leaders at velocities of around 400 feet per minute but due to the use of a larger blower than required for winter work in order to assure increased circulation in summer, present velocities are around 500 feet per minute. This has proved satisfactory in both seasons.

After the plant was placed in operation the system was balanced with pipe dampers to secure temperatures somewhat out of the ordinary. As the plant operates most of the heating season the two south rooms on the first floor—living and dining room—are maintained at 72 to 75 degrees. The other first floor rooms are kept at 70 to 73 degrees. On the second floor the bath is kept at about 75 degrees, while the bed rooms are supplied with enough heat for 60 to 65 degrees.

Summer Operation

The system was used last summer with results which certify the excellence of the design. In planning the system it was intended to cool four rooms—the living and bed room on the first floor and two bed rooms



The Waldon house is a large brick structure with a one-story living room and sun room. The exposed site gives a good idea of the cooling problem.

on the second floor. Due to riser sizes and the impossibility of tearing them out, the second floor did not show as large a decrease in temperature as planned.

However, Mr. Waldon reports that with outside temperatures of 96 to 100 degrees it was possible to cool the entire first floor below 79 degrees dry bulb and the two first floor rooms mentioned to 76 degrees. The upstairs bedrooms were reduced to about 94 degrees. First floor temperatures without the conditioner operating were above 92 degrees.

to drop the humidity would be expensive and also require a far larger spray chamber than space permits.

During this present winter the sprays have been cut off most of the time. Humidity is obtained satisfactorily through the moisture pickup from the sheet of water which lies in the base of the conditioner below the spray heads and under the eliminator plates. During some periods, a few heads were used when air

(Continued on page 36)

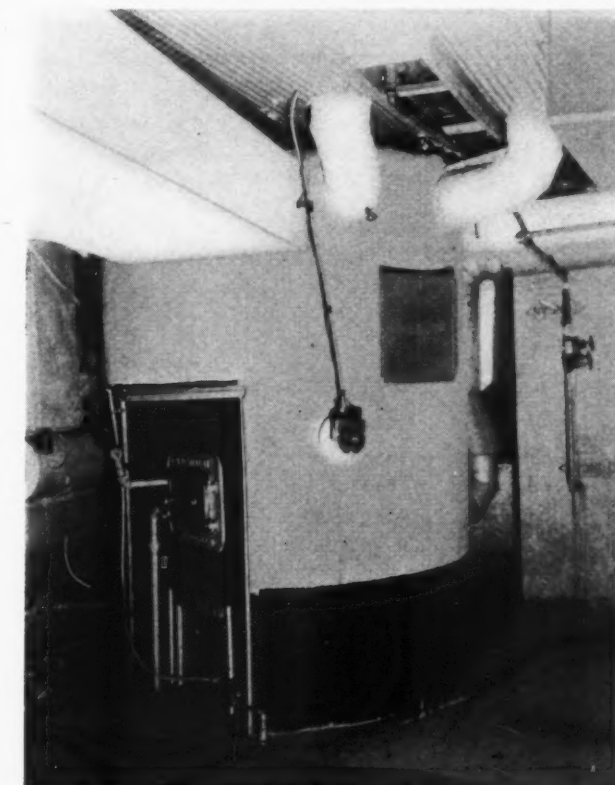
The Conditioner

In view of these inside conditions, the conditioner is of much interest, both as to design and operation. The conditioner consists of the arrangement shown in the detail with additional data shown on the basement piping plan.

Return air from the house is split into two streams—the first returning from the four rooms referred to above passing through the air washer and the air from the other rooms directly into the blower, by-passing the washer. In addition there is an outside air intake as shown on the two plans.

The cooling unit consists of 18 spray heads arranged in two banks of nine heads each as shown. By throwing a valve either nine or 18 heads can be used as required. Each spray throws approximately one half gallon of water per minute or a total for 18 heads of 9 gallons per minute. The entering temperature of the water in summer is about 55 degrees. This water is obtained from a deep well sunk by Mr. Waldon on his property. The water cost, including power for pumping and deterioration of the equipment is about 75 cents per 24 hours. The pressure used varies from 30 to 50 pounds according to the setting.

The temperature of the wasted water last summer



The furnace is specially designed for oil burning. The casing is insulated and all exterior surfaces are painted.

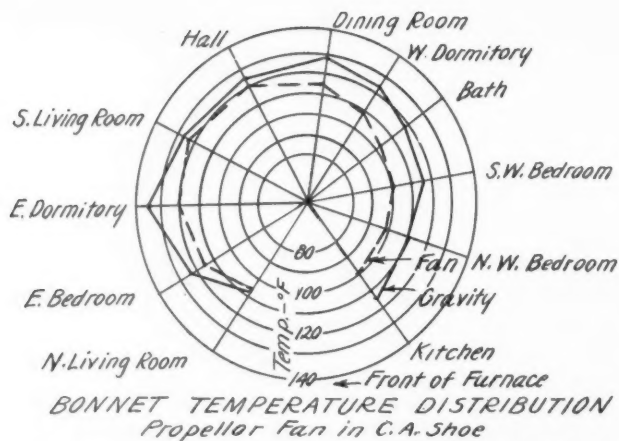


Fig. 2—With a propellor fan placed in the cold air shoe there is as much as 20 degrees difference in temperatures around the bonnet. Note how the temperatures follow the gravity temperature line

THE previous discussion on automatic humidifiers showed that, under gravity conditions, humidifiers located in the bonnet gave a higher rate of evaporation, per unit area of water surface exposed to the air, than humidifiers located at lower levels inside the furnace casing. This rate applied to gravity conditions. We also saw that high fan speeds reduced evaporation, that it was easily possible to have no evaporation if the fan speeds were too high and that, under usual operating conditions (which means a minimum of attention), bonnet temperatures may vary more than 100 deg. Fahr. The latter factor, of itself, results in a wide variation in the amount of evaporation which can be had from any humidifier.

When fan systems are used it is vital that efficient methods be applied to tightening the building because the air movement from inside outward and from outside inward will be increased by the increased pressures set up by the fan. From Fig. 6 in the February article it is evident that the maintenance of an evaporation rate of 6 gallons, or 50 pounds, of water per 24 hours requires a bonnet temperature of about 110 deg. Fahr. This rate can not possibly maintain a 35 to 40 per cent relative humidity unless the building is very tight. Bon-

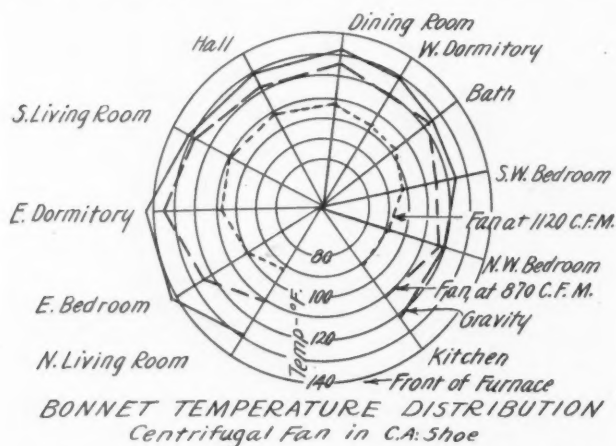


Fig. 1—With a centrifugal blower in the cold air shoe, temperatures are about 20 degrees lower and there is about 10 degrees variation around the bonnet at set speeds. Note the decreased temperature with increased fan speed

Principles of Humidification

By

Malcolm Tomlinson

net temperatures above 110 deg. require that fan speeds be kept below 1000 revolutions per minute (r.p.m.).

It would appear, from Table 1 in the February article, that higher bonnet temperatures can be had with a centrifugal fan located in the cold air shoe rather than a propellor fan in the bonnet. This is actually the case, although the tests with the bonnet fan gave boot rather than bonnet temperatures. Nevertheless, there is no doubt that the presence of a fan reduces the bonnet temperatures below those possible when the fan is in the cold air shoe.

At the same time there is a more uniform distribution of air temperature in boots when the fan is located in the bonnet. This fact can be seen in Fig. 3 of the present articles. When located in cold air shoes the propellor fans set up a condition of turbulence which markedly reduces the volume of air handled. In other words, resistance to air flow is set up when a propellor or booster fan is used in the shoe. For example, at the Research Residence, a propellor fan with a rated air capacity of 1350 cubic feet per minute (c.f.m.) gave an output of only 950 c.f.m. Therefore, the centrifugal fan is better fitted for installations in the cold air shoe. On the other hand, the propellor fan is more suitable, mechanically, for location in the bonnet. This fact is brought out in the comparative temperature distributions shown in Figs. 1, 2 and 3 attached.

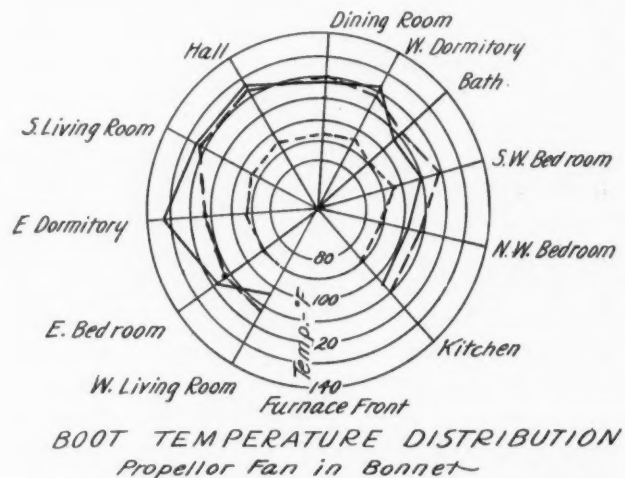


Fig. 3—With a propellor fan in the bonnet, temperature variations are less than 10 degrees, and temperatures are low. The temperatures are taken in the boot in this graph

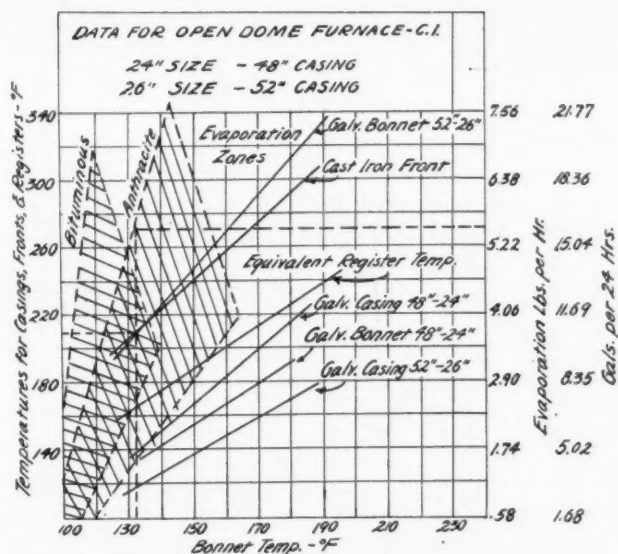


Fig. 4—To use this chart select the temperature for casing, front or register (whichever is known). Project to the right to intersect the corresponding casing, front or register curve. Project from the intersection to the maximum evaporation line for the coal used. Project from this point to the right hand scale and read gallons of water per hour possible to evaporate. Or project downward from the casing temperature-casing curve and read the bonnet temperature

The location of the automatic humidifier depends on the particular point in the warm air furnace where the highest air temperatures are to be had. *With a booster fan of the centrifugal or propellor type this point is in the bonnet. With a propellor fan located in the bonnet the highest temperature point, as far as the furnace casing is concerned, is somewhere below the bonnet.* In this connection it should be noted that the automatic humidifier serves to set up a different condition, by obstructing the air flow, than is had under conditions where the humidifier is not used. This obstruction will, quite naturally, give a somewhat different temperature distribution than those to be seen in Figs. 1 to 3 inclusive.

The data presented above were obtained in Bulle-

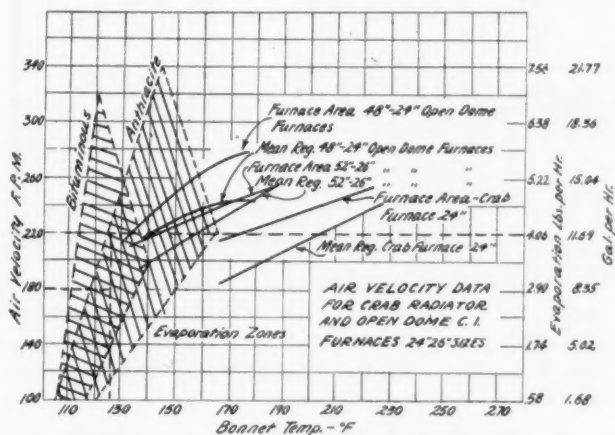


Fig. 5—On this chart are plotted furnace area and mean register temperature for two types of heaters. Taking any bonnet temperature project upward to the area or register curve (whichever is known) and read on the left scale the air velocity. Or project upward to the maximum evaporation line for the coal used and project to the right scale to read the gallons per hour possible to evaporate.

tin 246 of the Engineering Experiment Station of the University of Illinois. Furthermore, the three figures referred to were also obtained from the same publication.

The question naturally arises as to the effect of casting temperatures, air temperatures and air velocities on the evaporation which can be had from automatic humidifiers.

In Fig. 6 of the February article we have seen the two "zones" of evaporation for warm air furnaces fired either with anthracite or bituminous coal. The highest evaporation rate—for a given bonnet temperature in each zone, corresponds to the action which can be expected from a humidifier in the dome or bonnet. Lower rates than these will be had when the humidifier is in a less favorable position. We will use these two evaporation zones to help us determine the effect mentioned.

It is evident that the design of the warm air furnace will influence, to a considerable extent, the results

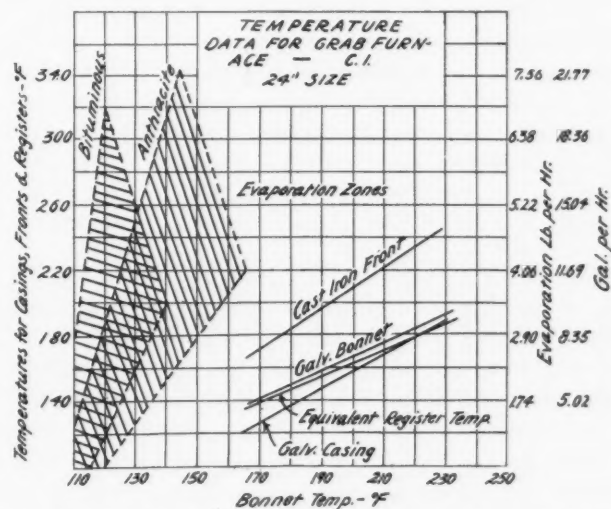


Fig. 5—This chart is similar to Fig. 4 excepting it is for a crab radiator type heater

had from any humidifier. Therefore, research results on two types of cast iron furnaces—the open dome and the crab radiator—will be presented. These data are to be found in Bulletin 188, of the Engineering Experiment Station of the University of Illinois.

In Figs. 4, 5 and 6 the equivalent register temperature, the galvanized casing temperature, the galvanized bonnet temperature, the cast iron front temperature, the air velocity for the furnace area and the mean register air velocity for the first floor register will be found plotted against the bonnet temperature. To the left hand, on each of these charts, the zones of evaporation are also plotted.

The practical use of these charts are at once apparent if an example is followed through. Suppose an open dome furnace of 26-inch size and 52-inch casing is in use. What evaporation can be expected when the cast iron front has a temperature of 210 deg. F., when the equivalent register temperature is

(Continued on page 36)

Conversion Burners

[Continued from February]

Regulating Air Supply

AS has already been indicated, after a burner is installed in a furnace, proper regulation of the air supply is necessary to insure the attainment of best efficiency. Practically all conversion burners are supplied with some sort of adjustable air door, for varying the amount of air admitted to the fire. The intensity of draft also affects the air supply, and will be considered first.

Chimney draft is highly variable. In cold weather, with a steady fire, the chimney is hot and the draft strong. In mild weather, the reverse is true. Varying winds also affect the intensity of draft, and it may easily happen that a wind may blow fumes down the chimney momentarily. These variations cause corresponding changes in the air supply, so that, when installing a gas burner it is desirable to eliminate the chimney draft if possible. For this purpose, gas-fired furnaces are supplied with draft hoods. These are not generally used on conversion jobs, although their use is advisable wherever possible. The only thing likely to prevent is lack of sufficient head room, as draft then becomes a function of the height between fire and hood. The writer has observed cases where the draft hood had to be set so low that not enough draft was available to give proper air supply. In all cases, raising the hood a few inches by means of a short length of pipe was found to correct the situation. Where draft hoods are not furnished by the burner manufacturer, they can easily be made of thin sheet metal with brazed joints. A hood made by the writer in this way, which has proved quite satisfactory is shown in Fig. 2.

It has already been shown that all air leaks above the fire must be stopped. It is almost equally important that all air entering below the fire shall be under control. Hence the necessity for stopping leaks applies both above and below the fire. This must be done before attempting to adjust the burner.

Assuming that the gas valve has been set to heat the house properly when turned on full, the air door may now be adjusted.

Some burners have only one air adjustment. Others have both a primary and a secondary, or main air supply, of which the primary should be set first. The primary air supply is small in amount, and the net effect of a change in its adjustment is to shorten or lengthen the flame. More primary air gives a shorter flame. Since the shorter flame is generally conceded to give better efficiency, it follows that the primary air opening should be as large as possible consistent with

By L. C. Price

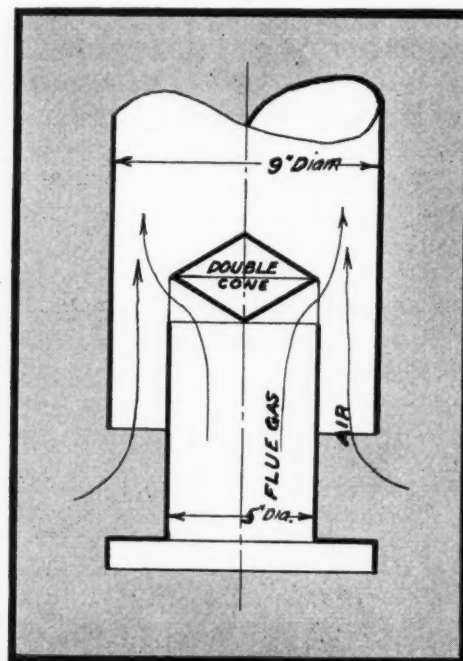
How To Install, Adjust And Test Them In Furnaces

safety. Caution is necessary, however, as too much primary air may cause the flame to backfire and burn in the mixer tube. The primary adjustment, therefore, while aiming to give a short flame, must not be opened so far as to cause the flame to backfire.

There is only one way to make any satisfactory adjustment of the main air supply; that is by the aid of analyses of the stack gases for percentages of carbon dioxide and oxygen. This is done by means of the familiar Orsat apparatus which uses chemicals to absorb, successively, the carbon dioxide (CO_2), oxygen (O_2) and carbon monoxide (CO), in the flue gas. It cannot be too strongly emphasized that it is practically impossible for even the most experienced man to adjust a gas burner by eye or smell and be sure of getting the adjustment anywhere near correct.

Fig. 2

This drawing shows a recommended type of draft hood which can be made of sheet metal. A good draft hood will eliminate chimney draft and make the air supply more uniform



The percentage of CO_2 and oxygen in the flue gas indicate the excess or deficiency of the air supply, and many tests by the writer and others have shown that best efficiency is obtained when the adjustment is such that the CO_2 is the maximum obtainable. The theoretical maximum percentage of CO_2 for the gas in Fayetteville, Arkansas, is 11.7. This figure is never obtained in practice, since no burner is ever able to mix the gas and air perfectly. In exceptionally good installations, the writer has sometimes been able to get as high as 11.4 per cent CO_2 , indicating about 4 per

cent excess air. Fig. 3 shows a typical relation between efficiency and percentage of CO₂ in the flue gas, plotted from actual test data.

It is quite plain that best efficiency is obtained when the CO₂ is the maximum possible. It is evident, also, that the same CO₂ reading, if below the maximum, may be obtained with either excess or deficient air, so that CO₂ alone will not tell whether the air damper opening is too much or too little. Both CO₂ and oxygen figures, however, will give the necessary information; the oxygen content is always greater when the air is in excess. Figure 3 also shows that the reduction from best efficiency is about twice as great with deficient as with excess air.

Adjustment of the main air supply, therefore, must involve several trials, to find what setting of the air door (and pipe dampers, if a draft hood is not used) gives the highest possible percentage of CO₂ in the flue gas. It is inadvisable, however, to leave the air damper so set, as variable draft conditions may sometimes cut down the air supply. The air damper must always be opened a little farther in the interest of safety. The writer has found that the best procedure in adjusting the main air supply is to try several settings, analyzing the flue gas at each setting, until that adjustment is found which gives maximum CO₂. Then, if a draft hood is used, open the air door until the CO₂ falls to one-half per cent below maximum. If no draft hood

▲
 Fig. 3
 How efficiency is effected
 by the amount of excess
 air is shown by this chart.
 Note that the greatest ef-
 ficiency occurs as combus-
 tion completeness rises
 ▼

is used, increase the air supply until the CO₂ is one per cent below maximum. In any case, the amount of excess air necessary depends on the completeness with which the burner as installed mixes gas and air, and on the variableness of draft. Where 10½ per cent CO₂ would be safe with a good burner properly installed, 9 per cent might be risky or impossible with a bad job.

Automatic Control

Setting of the air flow rate as outlined above will give proper air supply at only *one* rate of gas flow. Change in the latter requires resetting of the air for best efficiency. It is inevitable, however, that the gas flow must be varied to take care of varying heating requirements, and the automatic control is greatly preferable to hand methods.

First, the desired house temperature can be maintained more closely by automatic control than by hand.

Second, hand control is almost always by throttling of the gas only, so that in mild weather the air excess is very large. Most automatic controls are of the

"on-and-off" type, which turn the gas full on and entirely off, intermittently. These controls usually are, and always should be connected to the air door so as to close it when the gas is off, preventing passage of air during the "off" periods. This air simply cools the furnace, and its stoppage has been found to result in a gain in efficiency at normal heating loads.

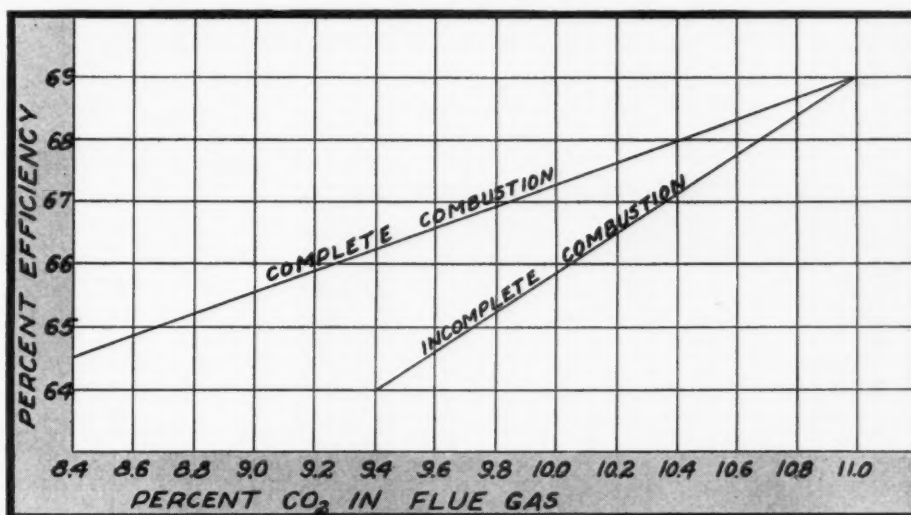
Summary

The foregoing discussion has attempted to show that furnaces using gas in conversion burners will operate most economically when the following recommendations are followed:

When the burner is installed, all firebrick lining in the furnace should be removed.

The burner must be installed low in the furnace, so that the gas flame strikes the walls as near the grate level as possible, even if this necessitates the burner tips being slightly below grate level.

When the burner is much smaller than the furnace firepot, a sheet metal floor about level with the burner tips is advisable, so that all air will be forced into close contact with the gas flame. In this case also, baffles are necessary to throw the flame against the furnace walls. A clearance space 1 inch wide between baffle and wall is usually sufficient.



The burner and baffle must be accurately centered so that the clearance space is the same width all around.

All air leaks in furnace doors and dampers and in or around the burner must be stopped.

The use of a draft hood to eliminate chimney draft is advisable wherever possible.

Satisfactory adjustment of the air supply is possible only with an Orsat apparatus. Best efficiency is obtained when the CO₂ in the flue gas is the maximum possible. Safety demands that the air supply be increased beyond this point until the CO₂ is lowered ½ to 1 per cent below maximum.

Economy is improved by the use of automatic control which shuts off the air when the gas is off.

A circulating fan to speed up the circulation of air through the furnace jacket is almost necessary for the sake of economy when burning gas. This fan can be stopped and started automatically with the gas, or by some other means of automatic control.



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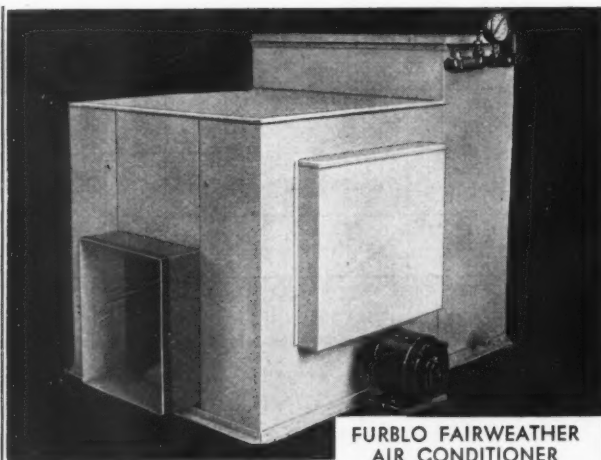
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LAKE SIDE COMPANY

Makers of Furblo

HERMANVILLE, MICH.

Principles of Humidification

(Continued from page 33)

150 deg. and when the mean register air velocity is 180 f.p.m.?

Turning to Fig. 4 we locate 210 deg. on the left hand index and pass to the right until we reach the curve for the cast iron front. At this point we find the intersecting bonnet temperature is about 133 deg. For this temperature we find that the best bonnet evaporation, with anthracite coal, is about 16 gallons per 24 hours. In the same manner we find that the bonnet temperature which corresponds to an equivalent register temperature of 150 deg. is about 117 deg. At this temperature we could obtain, under best conditions, an evaporation of about 8 gallons of water per 24 hours with anthracite coal or about 16½ gallons per 24 hours with bituminous coal. Again, turning to Fig. 6 of this article and extending the curve for the mean register velocity, we obtain a bonnet temperature of 126 deg. and an evaporation, for anthracite coal, of about 11.7 gallons per 24 hours.

With these charts it is also easily possible to determine roughly the temperatures or air velocities at various points about the furnace providing the evaporation rate is known and the furnace type is one of the two covered by these data.

Since air washers only operate a fraction of the time and since the success of automatic humidifiers is dependent on many factors, including the attendance given, the design of the furnace, the location of the humidifier and the maintenance of constant temperatures, it is evident that the automatic humidifier is a success under favorable conditions but is not always effective under average conditions.

A Remodeled Job

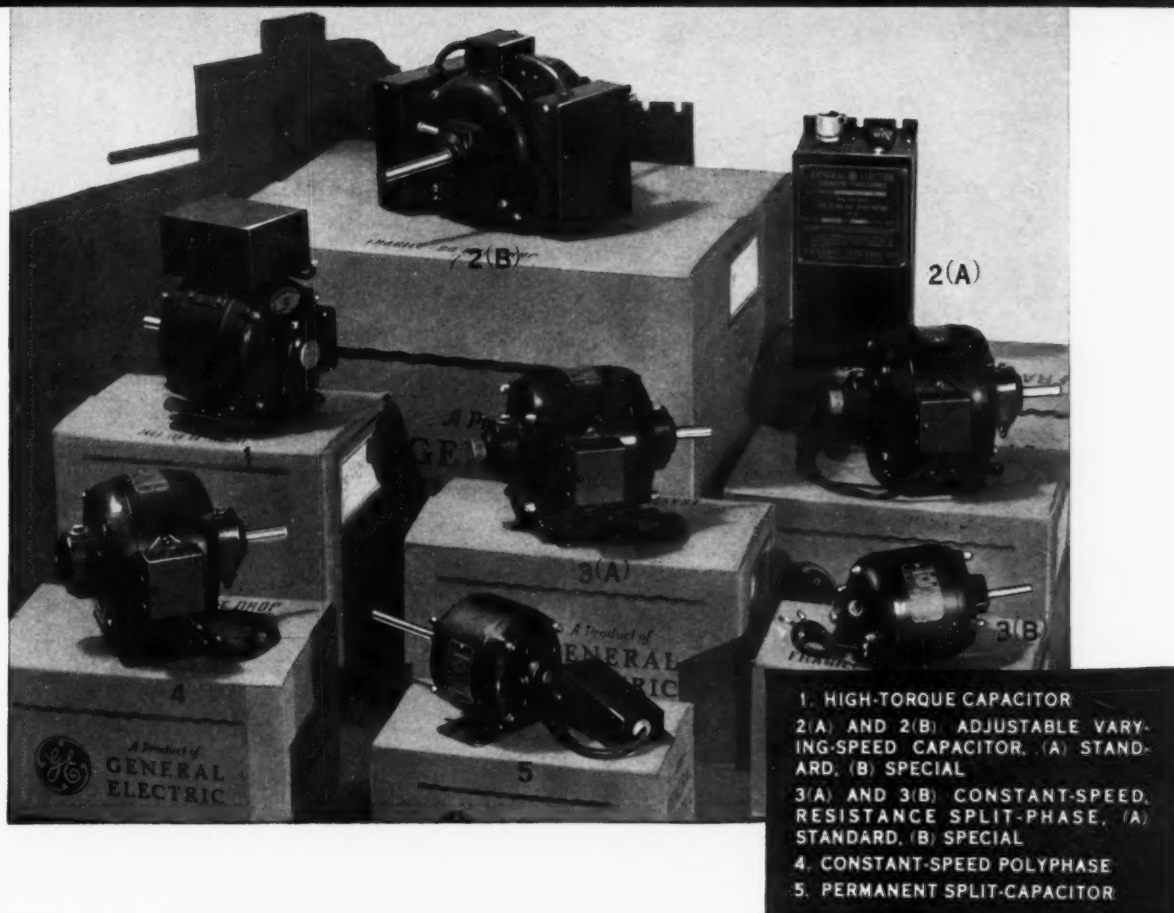
(Continued from page 31)

temperatures were too low to effect sufficient moisture pickup from the pan.

During the summer period all returns which enter the blower directly are shut with their dampers compelling all air to be washed and cooled. In winter it was proposed to regulate the return from these rooms so that when the sprays were working the amount of humidity could be controlled in two ways. First by changing the volume of air not washed as compared with the amount passed through the sprays, or, second, operate fewer or more heads in the spray bank. How these two methods are operated is shown on the drawing of the conditioner.

The photographs of this installation show that this comparatively large conditioner required considerable ingenuity to get the necessary piping and housings located in the area behind the furnace. Every section is equipped with doors so that tests and experiments can be made without disconnecting the system.

PACKAGES OF POWER FOR AIR CONDITIONING



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Industrial Air Conditioners
Kitchen Ventilators
Paint Spray Booth Fans
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Railway Car Air Conditioners
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Refrigerator Fans
Room Coolers
Rotary Roof Ventilators
Schoolroom Heaters
Special Devices
Unit Coolers
Unit Heaters
Unit Ventilators
Window Ventilators

210-205

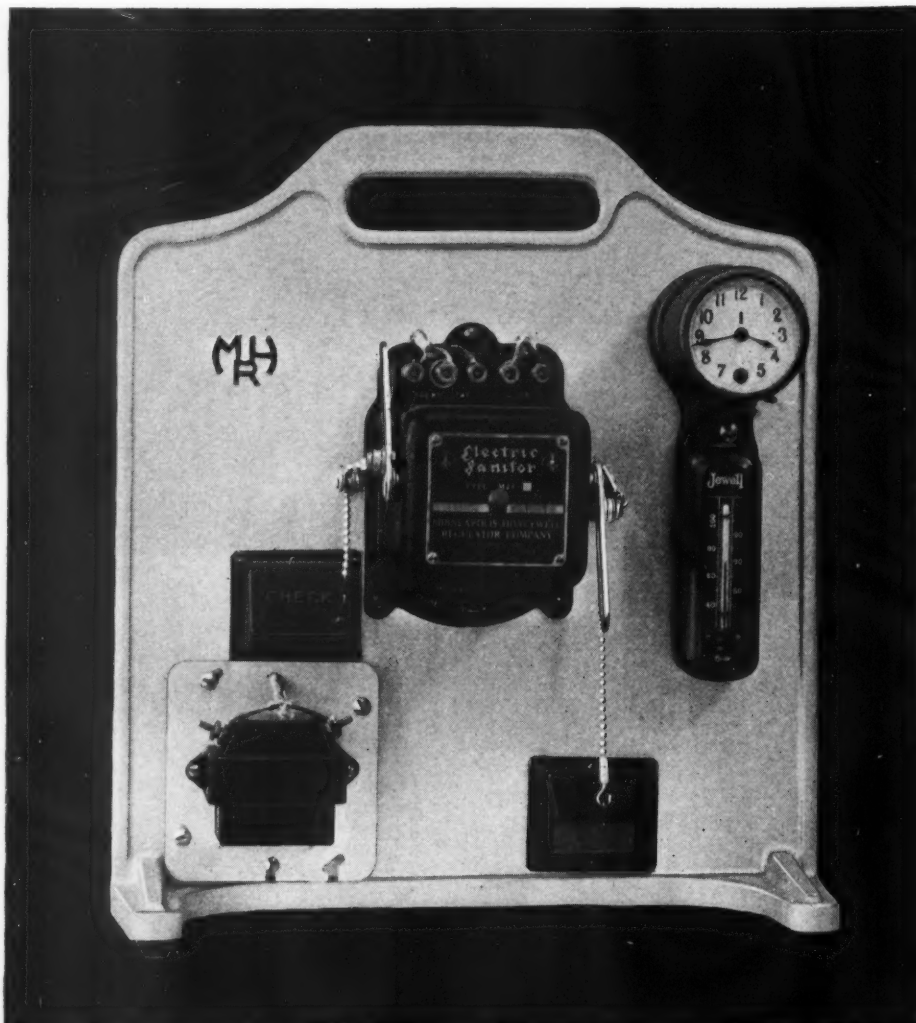
GENERAL ELECTRIC

This . . .

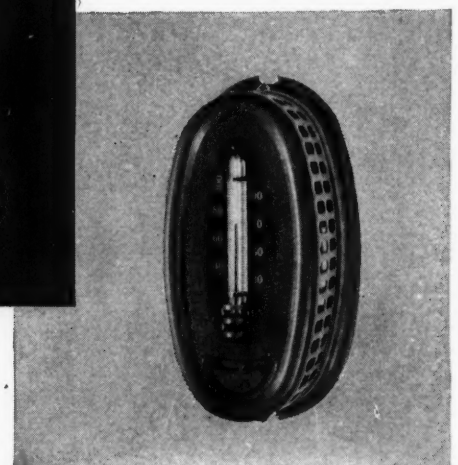
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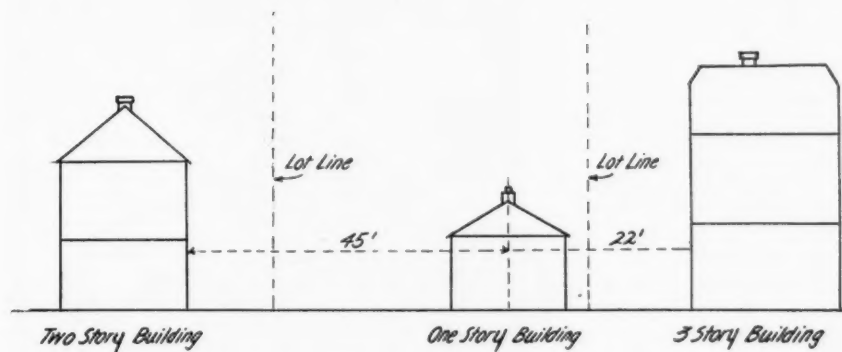


THIS DISPLAY, of cast aluminum, is completely equipped with dampers, chains, pulleys, rubber cushions, electric cord and plug, and is drilled and tapped for either the DeLuxe Electric Janitor (illustrated) or the standard model (thermostat shown below). You merely mount the equipment from your stock, and connect the wiring.



MINNEAPOLIS-HONEYWELL
Control Systems

..the Problem Corner



Chimney Down Draft

American Artisan:

I would like to get some suggestions for remedying a down draft in a chimney. This chimney top sets on a low, one-story building. Next door on one side is three-story building, about 20 feet away. On the other side is a two-story building, about 45 feet away. The front and back of the building on which the chimney is located are clear.

The chimney tile is 12 inches in diameter. There is one 8-inch furnace pipe and one 6-inch laundry stove (with damper) using this flue.

The trouble is most pronounced on windy days when the wind seems to come down off the three-story building into the chimney causing a troublesome down draft. Sometimes there is a regular whirlwind between the buildings above the chimney.

The draft is not too good at any time, but if there was no down draft the chimney would work satisfactorily.

My idea is some sort of a top which would draw, would not catch soot, and would keep air from going down the chimney.

F. K.,
Michigan.

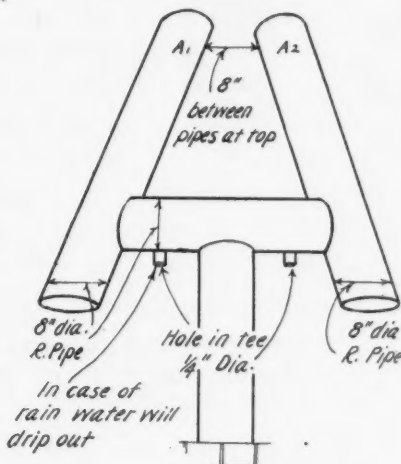
Reply by
Rex Steinle, Ohio

In our January Problem Corner we published a letter from a reader who asked suggestions for overcoming a chimney down draft. The chimney is located as shown in the illustration. Two suggested remedies were printed.

Here is an additional solution sent in by Rex Steinle, Sidney, Ohio. Mr. Steinle also furnishes a drawing of the

chimney cap which he states he has used with excellent results on several chimneys having down drafts.

The cap is made up as shown in the sketch with all pipes of the same diameter. The only variable is the space between the tops of the legs and the pipe sizes. This space should be the same as the diameter of the pipe which fits on the chimney—an 8-inch pipe takes an 8-inch space, a 12-inch pipe, a 12-inch space, etc.



Mr. Steinle suggests that in cases of rectangular flue liners, say 8 by 10 or 10 by 12 inches, build a base from that size to a round pipe of 10 or 12-inch diameter. This base is, of course a transition from rectangular to round.

Mr. Steinle states that he has found an 8-inch pipe cap satisfactory for most chimneys. He also declares that this cap will permit even draft and eliminate all down drafts caused by swirling winds and that the cap will work regardless of wind direction.

Removing Milk from Can Seams

American Artisan:

In the very near future I expect a job of soldering between 500 and 1,000 milk cans that have been in use for some time.

I anticipate some difficulty in getting an acid or flux which will properly burn out the old milk in the seams before we solder the seams tight. Are there any concerns which make materials suitable for this particular use?

If you or any reader can give me some advice I shall appreciate it.

K. E. M., Wisconsin.

Reply by
The Editors:

We believe that the same general information published in the January Problem Corner covering retinning of milk vats applies to this particular problem. However, we shall welcome any information readers actually doing work of this type care to send us.

Standing Seam Roofs

American Artisan:

Is $\frac{1}{2}$ inch to the foot enough pitch for standing seam roofs?

A. C. B., Illinois.

Reply by
The Editors

In general, the limitations for slope for the three general types of roofs are as follows:

Batten Seam—Use on slopes of 3 inches per foot or more.

Standing Seam—Use on slopes $2\frac{1}{2}$ inches per foot or more.

Flat Seam—Use on slopes $\frac{1}{4}$ inch per foot or more.

Standard recommendations for the proper seam to use on your roof where the slope is $\frac{1}{2}$ inch per foot would call for a flat seam, properly soldered.

Note—If any reader would like to comment on this inquiry, please send in your recommendation or experiences.—The Editors.

A MODEL of EFFICIENCY

The Akron Air Blast is a challenge to the heating contractor in search of a *model* furnace. What is of most interest to buyers and that which closes more sales than any other features is the ability of the furnace to extract most heat from the fuel consumed, and to do this efficiently over the longest period of years.

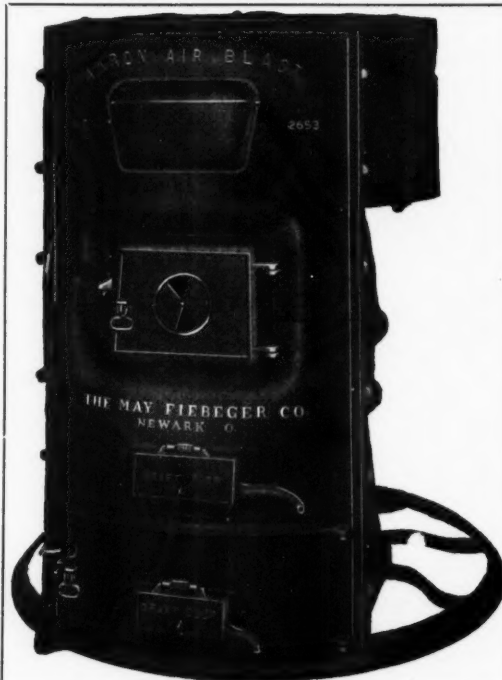
That requirement aptly describes the Akron. Not content to build a furnace and let it find its way to its own destiny, the Akron has been changed and improved during its 43 years on the market until today it does everything required of a furnace, does it well and at a cost that is acceptable to the homeowner, as has been proven during the last few years of close buying.

The Akron Radiator, the Three-Way Air Blast, the greater heating surface in the Akron; these are all reasons why Akrons will make money for you.

Let us send you literature describing the Akron. Or ask for literature on the Ath-A-Nor and the Solid Comfort. Here is a line of furnaces that will meet every heating requirement.

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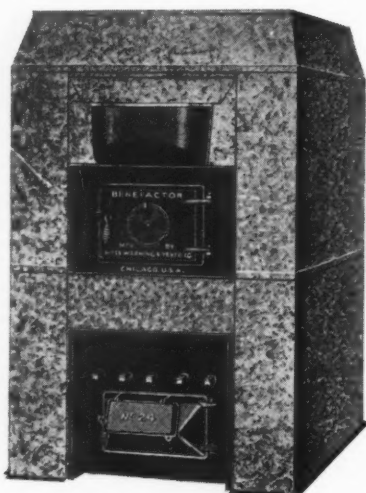


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TERRITORY DESIRED?

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Motor-Wind Ventilator

A new type of ventilator, which combines in its construction provision and mechanism making the unit operative under all exterior wind conditions is announced by the Allen Corporation, Detroit.

The new ventilator is said to be a radical departure from anything now on the market in that gravity wind action is utilized until the wind falls below a determined velocity or sets up down-drafts. When this point is reached a motor, connected to the revolving head, is thrown into gear by a clutch and maintains a negative pressure under the head.



The off and on cycle of the motor is controlled by the clutch which is set to a predetermined wind velocity. The motor is on top and outside of the ventilator head. It is totally enclosed and unaffected by weather.

Complete details on the new ventilator, together with description of the unit's special qualifications, applications, etc., can be obtained from the Allen Corp., 14th St. and Howard, Detroit.

New Automatic Stoker

Link-Belt Company, 2410 W. 18th Street, Chicago, manufacturers of coal and ash handling and other power plant equipment, announce the Link-Belt Automatic Underfeed Screw Stoker. This stoker is at present made

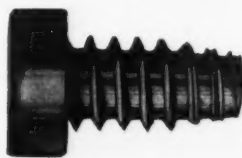
in a number of sizes suitable for heating plants and smaller steam plants—boiler capacities from 10 to 250 B.H.P.

Some of the features are:

1. Unique design of motor mounting, permitting direct connection to the forced draft fan.
2. Variable speed transmission regulating coal feed, provided with safety shearing pin for overload protection.
3. Chrome steel screw conveyor.
4. Finished castings of heavy grey iron.
5. Automatic electric controls for operating at pre-determined boiler pressures.

New Cap Screws

After three years' use, at first experimentally and then in regular production, in some of the largest metal working plants in the country, Hex Head Hardened Self-tapping Cap Screws take their place as a full-fledged member of the Parker-Kalon time- and labor-saving fastening devices. Like other types of Parker-Kalon self-



tapping screws, these cap screws eliminate tapping . . . they form their own thread in the material . . . as they are turned in.

The screws are extensively used for making fastenings to sheet metal from 24 gauge (.025-inch) to 10 gauge (.140-inch).

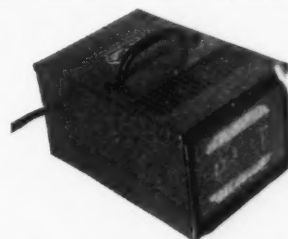
They are made in a complete range of sizes from No. 6 to 1/2-inch diameter.

Test samples will be sent free to any sheet metal contractor.

Demonstrator Unit

The Peerless Electric Company, Warren, Ohio, has announced a new air sampler unit designed to be used by the salesman or demonstrator selling air conditioning equipment. A small compact cabinet, 8x5 1/2 x 4 inches with grilled inlet and outlet houses a miniature motor and blower wheel. The grilled openings prevent possibility of catching draperies or curtains, or injury to children. A retaining frame over the inlet grill is designed to hold a stencil of any suitable design.

A small electric motor drives a blower wheel of standard centrifugal design, drawing room air through the filter material and exhausting it



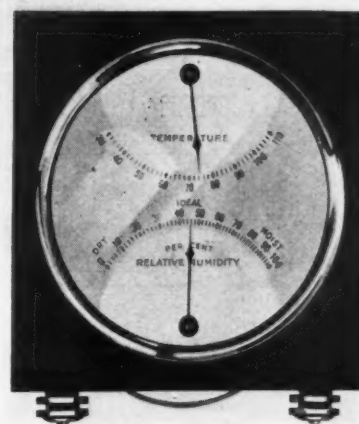
through the grilled outlet. After a day's run in the average room, the design on the stencil shows up in black the dirt removed from the air by the filter, as the case of the sampler illustrated—spelling dirt.

Complete information on the price and operation may be obtained from the company.

Condition Indicator

A compact and attractive instrument designed to show directly on visible scale the dry bulb temperature and the per cent of relative humidity has been placed on the market.

The unit is arranged with legs and a brace so that it can be placed on tables in any room of the house. The actuating element is treated metallic



and will not get out of adjustment unless the instrument is subjected to extremes of humidity, heat or cold.

The instrument is priced so low that it can be presented to the buyer of a conditioning system or sold at a profitable price. Full details are contained in literature prepared by the manufacturer.—Fee and Stenwedel, Inc., 221 West Chicago Ave., Chicago.

Good Prospects--EVERYWHERE!

Every residence, from the most pretentious to the modest cottage; besides every public building that can use warm air heating—all are good prospects for the dealer selling the extensive Moncrief line of cast and

steel furnaces and air conditioning units. The name "Moncrief" has stood for quality for a third of a century, and today it presents more in satisfaction and value than ever before.

Send for circulars and particulars of the Moncrief proposition.

THE HENRY FURNACE & FOUNDRY CO.

3471 E. 49th St.

Cleveland, Ohio

Branches at Pittsburgh, Pa., and Ashtabula, Ohio.

Pacific Coast Representative

McPherson Furnace & Equipment Co., Seattle, Wash.



Cutaway View of the Series "C" Cast Furnace

—DISTRIBUTORS—

Chicago Furnace Supply Co., Chicago, Ill.

Moncrief Furnace Co., Indianapolis, Ind.

The F. H. Lawson Co., Cincinnati, O.
Johnson Furnace Co., Kansas City, Mo.

J. M. & L. A. Osborn Co., Buffalo and Detroit.

Anderson & Krapp, Toledo, O.

Geo. H. Cole Supply Co., Troy, N. Y.

W. H. Landers Co., Syracuse, N. Y.

Sheet Metal Supply Co., Milwaukee, Wis.

Northern Metal & Mfg. Co., Green Bay, Wis.

Schrader-Easley Co., Memphis, Tenn.

Marshall-Wells Co., Duluth, Minn.

Roberts-Hamilton Co., Minneapolis, Minn.

The Behler-Young Co., Grand Rapids, Mich.

Moncrief Heating Co., South Bend, Ind.

Moncrief Heating Co., Youngstown, O.

MONCRIEF FURNACES

**Perforated
Metals**
*for
every
requirement*

Steel, Brass, Bronze, Copper, Monel
Aluminum, Stainless Iron, Zinc

or any other metal

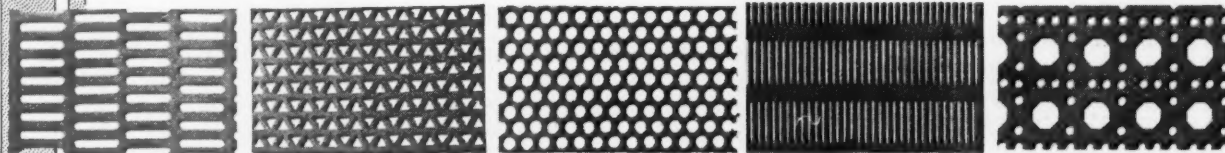
PERFORATED TO YOUR ORDER

Round holes from .020" to 7" Diam.

Oblong and Slot holes from .008" to 3" wide.

Grilles of distinction for fine buildings

Everything in Perforated Metal



THE HARRINGTON & KING PERFORATING CO.

5649 FILLMORE ST., CHICAGO, ILL., U. S. A.

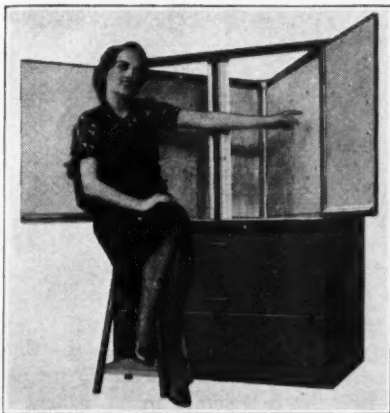
NEW YORK OFFICE, 114 LIBERTY ST.

Rudy Air-Washer

Rudy Furnace Co., Dowagiac, Mich., announces a major structural change in its air washer, important unit of Bon-Air conditioners, designed to simplify access to inside of apparatus when installed.

Spun glass filters, composed of several thicknesses of hair-like strands of glass laid between fine mesh screens, have been set into the washer in V position with V apex toward rear instead of base of unit as heretofore.

The new positioning permits building two full-opening doors into front



side of the washer. With the unit permanently in place to receive duct work, doors may be opened so filters can be removed for cleaning or spray nozzle adjustments.

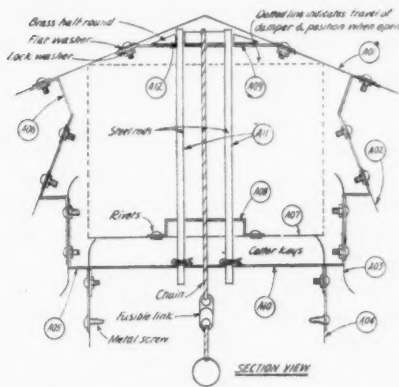
Washers are set on top and locked into blower units in Bon-Air Conditioner systems. Return air is taken in at top of the washer from ducts, is passed through washing chamber spray, through glass filters into the blower from where it is forced into furnace casing and warm air ducts to rooms.

Engineering Service

The Engineering Service Company, State National Bank Bldg., Corpus Christi, Texas, has been organized by Roy Buckley and Charles B. Buckley for the purpose of designing, engineering, testing and furnishing complete plans and details of all classes of sheet metal products to the sheet metal contractors.

Roy Buckley was associated with the American Cornice Works Co., at Wichita, Kansas, for twenty years during which time he was interested in engineering and producing sheet metal products which they manufactured and shipped to all parts of the United States and foreign countries.

Charles B. Buckley is a mechanical engineer and is specializing in the en-



gineering of sheet metal products and problems pertaining to ventilation.

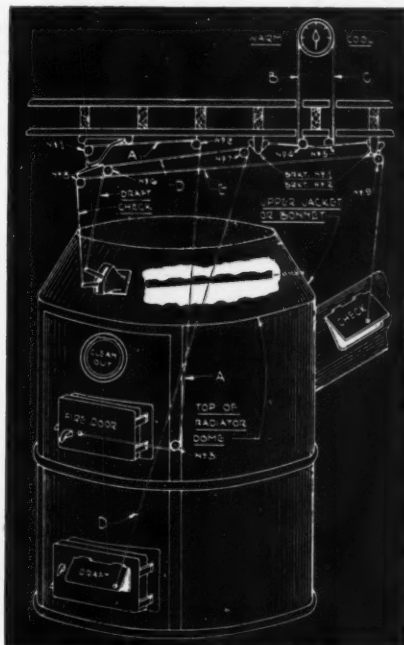
The company will not manufacture or sell any products but will furnish complete engineering data, details and complete drawings to sheet metal contractors so that they may manufacture products in their territory.

The company's first product, the Dawn ventilator, released to the sheet metal contractors, is the first of several products which they have been working on for the past seventeen months; others will be released as soon as the tests are completed in the experimental shop.

Mechanical Heat Control

A mechanical heat control operated by expansion of two dissimilar metals has been placed on the market by Furn-O-Lator, Inc., 1422½ Mishawaka Ave., South Bend, Indiana.

The heart of the control is a U-shaped bar of aluminum having a high rate of expansion when subjected to heat enclosing a bar of special alloy steel having a negligible rate of expansion. The expansion of these two



metals is used to operate the draft and check doors of the furnace.

The fire is controlled by pre-determined settings of the connecting arms and chains to maintain a steady fire. This setting is further regulated upstairs by a dial on which suitable markings show hotter or cooler temperatures.

Literature describing the control has been prepared and may be obtained from the company's office.

Horizontal Furnace

A horizontal steel furnace, all welded of heavy steel sheets, sized for residential installation and designed especially for oil burning is announced by the George Evans Corp., Moline, Ill.

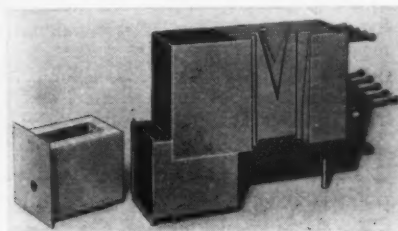
The furnace will be made in two sizes with rated pipe area of 833 and 1335 square inches respectively. The overall dimensions of the furnaces are 30 by 64 and 37 by 64 inches.

The furnace has a removable fire box which is withdrawn when placing



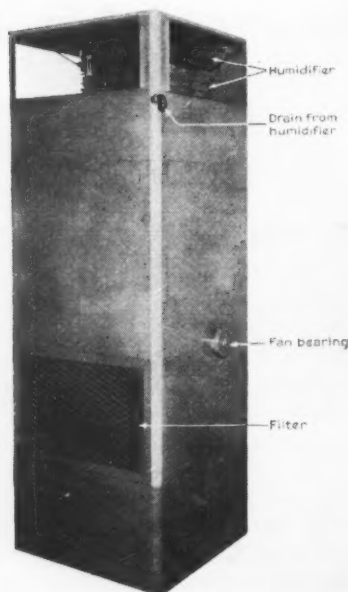
the refractory material. When the refractory and hearth are completed the fire box is shoved into position and bolted gas tight through a heavy gasket. In the smaller furnace a radiating area of 12,988 square inches and more than 20,000 square inches in the larger model provide greater efficiency from the burner, it is claimed.

From the combustion chamber long, comparatively thin, fire tubes with air spaces between extend to the rear where smoke exit is through a bottom collar.



G-E Air Conditioner

The General Electric Company announces an air conditioner, designed



to operate in conjunction with the oil burning boiler. Steam from the boiler is supplied to a heat transfer surface in the air conditioner, to supply heat to the circulated air. As the air is

circulated, it is filtered and properly humidified.

The air conditioner and boiler used together produce a warm-air heating system offering precise temperature control and efficient operation. In existing plants, the combination supplants the old furnace, and a new basement leader layout is connected to the existing wall stacks.

In operation, the air conditioner blowers draw air from the basement through two filters and discharge it upward through a heat exchanger then through humidifying screens and out into the duct system.

The air conditioner is built in a square, sectionalized, vertical cabinet. The upper section, which may be detached from the lower and turned to face in any one of four directions, contains the heat exchanger, the humidifier and the outlet manifolds.

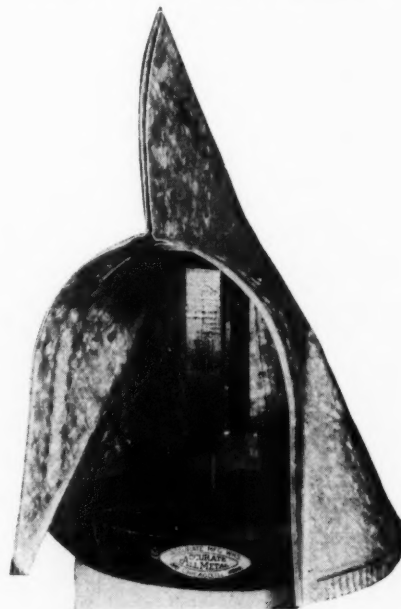
Revolving Ventilator

A revolving ventilator of recent introduction and designed to furnish quiet operation at an economical price is announced by the Accurate Manufacturing Works, 2432 Milwaukee Ave., Chicago.

The ventilator consists of a collar on which is mounted the revolving head

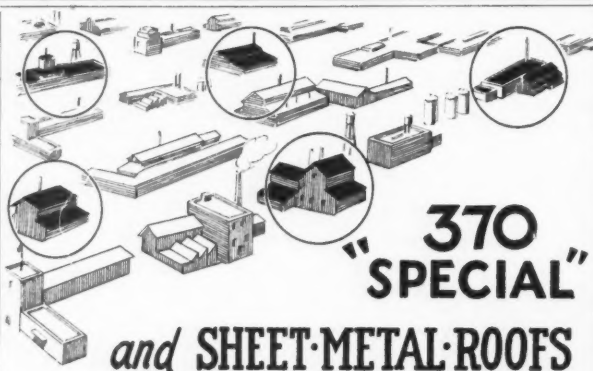
which is formed with the shield and wind guide in one piece of metal shaped like a hood.

This hood is light in weight and is mounted on a specially designed frame



and bearing which is protected by the hood. The ventilators can be furnished in sizes from 5 inches to 48 inches.

Prices and descriptive literature can be obtained from the company.



LOOK down upon the roofs in your community. Single out those roofs that are sheet metal and then make it your business to do the painting job.

And keep this in mind—sheet metal roofs must be painted regularly in order that they continue to protect the buildings they cover. Sheet metal roof painting is business that is constant and profitable.

With the fact that roofs must be painted regularly already established, the question that is important to you is, which paint to use, to do the job most satisfactorily and economically.

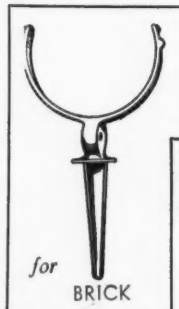
We suggest 370 "SPECIAL RED." Here is a paint, the ingredients of which, assure long life and protection and which is being recognized among buyers as an exclusive standard where quality is essential but where economy is stressed.

Other Thompson Products—Alumbrite—the new Aluminum Paint for Wood and Steel and Lin-O-Jap, the Perfect Reducing Oil for All Paint.

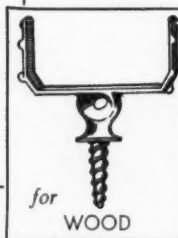
THOMPSON & COMPANY
P. O. Box 557, N. S. PITTSBURGH, PA.

You can do the job better with NEVER-SLIP CONDUCTOR HOOKS

Never-Slip, the Conductor Hook without a fault, made of Malleable Iron to withstand heavy usage and constructed so as to hold both round and corrugated pipe firmly without fear of slipping loose.



Write for Price List



MINNEMEYER CONDUCTOR FASTENERS offer convenience

Minnemeyer fasteners hold the pipe one inch from the building leaving room for painting around the back of the pipe and for later repairs to the conductor pipe.

LA CROSSE STEEL ROOFING & CORRUGATING COMPANY
LA CROSSE WISCONSIN

News Items

Indiana Announces District Meetings

The district meetings of the Sheet Metal and Warm Air Heating Contractors' Association of Indiana will be held in the following cities and on the following dates:

Robertsdale (Gary District), Friday, May 5.
 South Bend (South Bend District), Friday, June 23.
 *Indianapolis (Indianapolis District), Saturday, July 29.
 Muncie (Muncie District), Friday, August 25.
 Columbus (Columbus District), Friday, October 27.
 Bedford (Bloomington District), Friday, December 8

*This will be a picnic.

A hearty welcome is extended to every contractor in the districts whether or not he is a state association member in good standing. A profitable meeting and cordial welcome is assured.

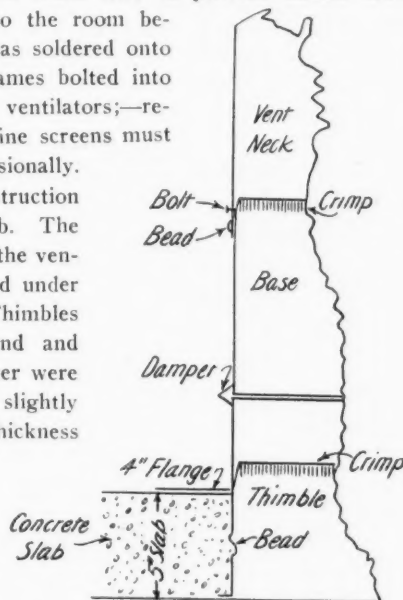
Interesting Ventilator Application

An unusual and interesting ventilator installation has just been made at the plant of the LasCruses Lumber Company, LasCruses, New Mexico.

The ventilators were screened with No. 40 wire mesh. Ordinarily, ventilators are loosely screened to prevent the admission of birds. These ventilators are being carefully screened with small mesh wire to prevent insects from gaining entrance to the room below. The mesh was soldered onto frames and the frames bolted into the mouths of the ventilators;—removable, because fine screens must be cleaned occasionally.

The roof construction is concrete slab. The sketch shows how the ventilators are installed under such conditions. Thimbles flanged on one end and crimped on the other were made in lengths slightly longer than the thickness of the slab. They are fastened into the concrete forms before concrete is poured.

Flanged bases slip over the crimped end of the thimbles and rest on the concrete slab itself. The ventilators are bolted to the base as customary.



McIlvaine Appoints New Dealers

Among the dealers recently appointed by the McIlvaine Burner Corporation, Evanston, Illinois, are:

John H. Bechtel, Milwaukee, Wisconsin; Zimmerman, Gertz & Niedemeyer, Milwaukee, Wisconsin; J. G. Bender, St. Louis, Missouri.

The S. S. Spencer Company of Minneapolis and St. Paul have been appointed distributors for Hennepin and Ramsey Counties, Minnesota.

INAUGURATED!

The proponent of "The New Deal" has been inaugurated as President of the United States.

There is a feeling in many quarters that business activity will improve now, and that "things will be better soon."

We do not ascribe any miraculous powers to the President of the United States, but we will all agree that, if enough people get to feeling that things will be better soon, things WILL be better soon.

Faith lives on Faith—Confidence grows on Confidence.

The Handy Pipe People

still have confidence in the United States, and we plan to do everything possible to help "The New Deal" get under way as soon as possible—for when things DO begin to improve, ALL of us must help—

And All of Us Will Profit



F. MEYER & BRO. CO.

Peoria

Illinois

It is no Racket! FURNACE CLEANING



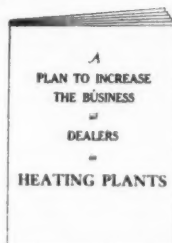
Special Heavy duty motor built particularly for this hard work. Moves 150 cubic feet of air 3 miles each minute—Volume and Velocity plus—THAT CLEANS! Total weight only 57½ lbs. Full assortment of tools.

is a decent and efficient way for you to show an owner that his heating plant needs your attention—the firepot cracked—the joints leaking gas—smoke pipe rusted out. Or that your new plant will give him the home comforts he wishes—heat control—air conditioning.

To get into the basements—to make contacts which will keep your shop busy—plus your good money on the cleanings themselves—use a Super Suction, the strong speedy one-man outfit.

THE Plan Book shows how others are landing cleaning jobs and tells how you may try the cleaner yourself before buying it—and then pay for it out of its own earnings. Your copy free on request. Write to

The National Super Service Co.
1944 North 13th Street Toledo, Ohio



MARSHALLTOWN

SHEARS



No. 18

SPECIFICATIONS

CAPACITY—
18 gauge and lighter—1¾" radius.

CUTTERS—
2"x1½"—high grade tool steel. Slightly knurled to feed material.

ADJUSTMENT—
One bolt. Instructions furnished.

SIZE AND MATERIAL—
Height 19½"; head cast steel; base cast iron; gears steel and cast iron. Shipping weight 45 lbs.

SHEARS THAT CUT

That's what you're looking for—shears that will save money for you—shears that stand the gaff.

Install at least one type of Marshalltown throatless shears in your shop. Do it now!

SHEARS FOR EVERY JOB: CUTTING CAPACITY UP TO 1½".

The **MARSHALLTOWN** line is complete—a shear for every use.

THE CATALOGUE TELLS THE STORY—WRITE FOR IT

MARSHALLTOWN MFG. CO. MARSHALLTOWN IOWA

News Items

Insurance and Compensation Changes

The New York State Association reports in its February 17 issue that two legislative changes of vital concern are being considered in its state legislature.

The first is a bill to be proposed at the coming session of the Legislature to establish compulsory unemployment insurance. This will be a further penalty on those who employ labor of any kind. According to the present set-up it means one and one-half percent of the payroll; \$1.50 on each \$100. The association believes this bill unjust and that legislation of this type should be fought.

The second bill would create additional burdens to be inflicted on employers by amendments to the Compulsory Workmen's Compensation Act. 1. Blanket coverage for all "Occupational diseases" under Workmen's Compensation Law. The additional burden on industry by the addition of this coverage is estimated at 15 to 20 million dollars, added to the present normal 60 million dollar a year cost, thereby increasing the rate 20 per cent or more. 2. Increasing the maximum compensation payments under the Workmen's Compensation Law. Similar proposals in the past indicate that this will increase the rate at least 10 percent.

Considering the present high rate charged for this type of insurance if these amendments are put into effect compensation rates will be increased by at least 30 percent.

Buy Staley Automatic Draft Regulator

K. M. Schaefer, president, Automatic Humidifier Sales Co., 6560 Cass Ave., Detroit, Mich., has announced that his organization will become the sole manufacturers and distributors of the Staley Automatic Draft Regulator, formerly made by Gray Bros., Plano, Ill.

Oil Burner Show Reservations

A total of 77 spaces by 47 exhibitors has been taken for the 10th National Oil Burner Show of the American Oil Burner Association to be held in Chicago at Hotel Stevens, June 12-16, according to Harry F. Tapp, executive secretary of the Association, who said that this large registration so far in advance of the opening date "will make this exposition a national event in the heating and air-conditioning field."

In addition, it is expected that there will be a large representation from the manufacturers of distillate burners who have recently placed the headquarters of their national association in the offices of the A. O. B. A. with the executive heads of the latter directing the activities of both groups.

American Sheet & Tin Plate Mill

A new half million dollar cold rolling mill for the Gary, Indiana, plant of the American Sheet & Tin Plate Company has been placed under construction. Equipment for the mill will be supplied by the E. W. Bliss Company, Salem, Ohio. This mill will be the largest of its type in the country.

General Motors Joins A. O. B. A.

With its oil burner now in distribution, the Delco Appliance Corporation, a division of General Motors, has applied for and been accepted into membership of the American Oil Burner Association. E. A. Halbleib is president of the Delco Appliance Corporation and D. M. Gardiner is sales manager of the Delco Heat Division.

News Items

Mueller to Use Frigidaire Units

Completion of an agreement with the L. J. Mueller Furnace company, Milwaukee, Wis., was announced recently by the air conditioning division of Frigidaire Corporation, whereby the Mueller company will sell complete year round Frigidaire air conditioning equipment through its national field organization.

The Mueller company's standard line of heating equipment will be used with especially designed installations for combined cooling and heating of homes.

Under the terms of the sales agreement, Frigidaire will furnish to the Mueller company through the Frigidaire national field organization the refrigerating equipment necessary for summer cooling and dehumidification. Installations and servicing of Frigidaire equipment will be carried on by Frigidaire outlets which will continue to retail air conditioning equipment as in the past.

Coates Represents Stanley

"Herb" Coates is now Pacific Coast representative for the Stanley Electric Tool Company, with headquarters at 576 Monadnock Building, San Francisco, California. He was formerly associated with Black & Decker and Van Dorn Companies.

Air Conditioning School Successful

Furnace men from various sections of the country were among the 202 students at the domestic and commercial air conditioning school held in Dayton under sponsorship of Frigidaire Corporation.

Seventeen members of the air conditioning, sales engineering and research divisions of Frigidaire made up the faculty of the school which dealt with all the problems of heating, cooling, humidification, dehumidification and air circulation included in complete year round air conditioning.

Explanations of many accessories used in air conditioning systems were presented by manufacturers' representatives. Included in the group were the American Air Filter company, Clarage Fan company, Binks Manufacturing company and the L. J. Mueller Furnace company.

Edwin A. Jones, chief engineer of the Mueller company, made an instructive presentation of the heating phase of year round air conditioning.

The importance of cooperation between salesmen and dealers handling cooling and dehumidifying equipment with furnace and heating contractors was stressed by Mr. Jones, who pointed out the close affiliation of furnace men with architects and builders and prospective owners of new residences and buildings.

Working demonstrations were made before the students of circulation of air through duct systems, tie-ins of summer cooling and dehumidifying equipment with heating plants and other factors of direct interest to furnace men.

90 Per Cent of Furnaces Need Repairs

W. E. Dodson, vice president of Callahan Coal Co., St. Louis, Mo., writing in the magazine "Coal Heat," states that 30 out of every 100 furnaces need new smoke pipes, one or two need new grates, 10 or 12 need re-cementing and 50 need some sort of work.

"Our experience has proven that the possibilities in the heating field are great," he writes. "Out of 577 furnaces cleaned this year, we secured 155 repair jobs and found an equal number that needed repairs."

WHITNEY LEVER PUNCHES

No. 1 PUNCH

Length, 34 inches. Capacity $\frac{1}{4}$ -inch hole through $\frac{1}{4}$ -inch iron. Punches and dies in sizes from $\frac{1}{8}$ to $\frac{3}{4}$ by 64ths.

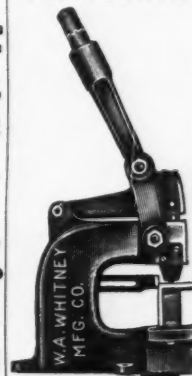
No. 2 PUNCH

Length, 23 inches. Capacity $\frac{1}{4}$ -inch hole through $\frac{1}{4}$ -inch iron. Punches and dies in sizes, $\frac{1}{8}$ -inch to $\frac{1}{4}$ -inch by 64ths.

CHANNEL IRON PUNCH

Companion to No. 2 Punch. Every part of the two Punches interchangeable, including punches and dies. Capacity, $\frac{1}{4}$ -inch hole through $\frac{1}{4}$ -inch iron.

No. 91 PUNCH



Capacity— $\frac{1}{4}$ -inch hole through $\frac{1}{4}$ -inch, 1-inch hole through $\frac{1}{4}$ -inch and 2-inch hole through $\frac{1}{4}$ -inch iron. Depth throat 5 inches. Weight 82 lbs.

We have tools for every purpose needed by Sheet Metal Contractors.

Ask your Jobber



No. 4B PUNCH



Length—8 $\frac{1}{2}$ inches. Capacity— $\frac{1}{4}$ -inch hole through 18 gauge. Deep Throat—2 inches. Weight—3 pounds. Punches and Dies— $\frac{1}{8}$ to $\frac{3}{4}$ by 64ths.

No. 6 PUNCH



Length—26 $\frac{1}{2}$ inches. Capacity $\frac{1}{4}$ -inch hole through $\frac{1}{4}$ -inch iron; especially adapted for button punching or template work.

W. A. WHITNEY MFG. COMPANY

636 RACE STREET, ROCKFORD, ILL.

EXTRA PROFITS

With the

CHAMBERLAIN HUMIDIFIER

The market for automatic humidifiers in existing warm-air installations offers real profit possibilities. The Chamberlain Automatic Humidifier is a moderately priced item, easily sold, quickly installed, with no service calls to eat up profits.

Thousands of installations are giving perfect service and heating contractors everywhere are making added profits by pushing this item. Write today for liberal dealer discounts and particulars regarding free advertising helps.



CHANDLER COMPANY

Cedar Rapids, Iowa

**HERE!
AT
BROWN
WALES
CO.**

Armco Ingot Iron Galvanized Steel Even Color Sheets Roofing Sheets Copper and Zinc	Stainless Sheets Paint Grip Sheets	Conductor Fittings Tin Solder Tools
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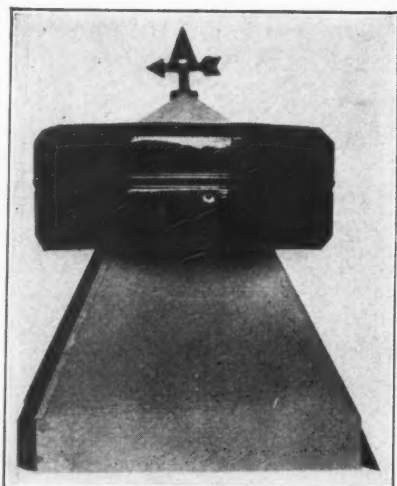
YOU'LL FIND THE PRODUCTS
YOU NEED
THE WAY YOU WANT THEM

BROWN WALES CO.

493 C STREET, BOSTON, MASS.

Members Armco Dist. Assn.

The JORDAN ATTIC VENTILATOR



Straight flaring
base. Sets low
and looks well.
Operated by
gravity and
wind action.

The Jordan Attic Ventilator presents an opportunity which offers profits to you *right now*. Write for information. There is summer business to be had and you can get it.

*Also Fan Ventilators, Rotary Ventilators, Stationary Ventilators,
Wall Exhaust Fans, etc.*

BACKED BY A COMPLETE ENGINEERING SERVICE.

PAUL R. JORDAN CO.

631 S. Delaware St., Indianapolis, Ind.

News Items

Death of Robert Miller

Robert Miller of Miller & Doing, Inc. of Brooklyn, N. Y., died January 22nd at his country home in Highland Mills, Orange Co., N. Y. in his 75th year. He is survived by his wife, Charlotte W. Ayres Miller and daughter, Ina M. Onderdonk.

With the passing of Mr. Miller, the sheet metal industry loses another member of the old school. Born at Salem, Ohio, at an early age he procured employment at the plant of the old Bakewell & Mullins Co. (later the W. H. Mullins Co.) in his home town, and after receiving a thorough knowledge of sheet metal working and the metal stamping industry, he sought greater possibilities farther West and spent several years in sheet metal shops in Chicago, Omaha, Neb., and Kansas City, Mo.

From Kansas City Mr. Miller journeyed to Washington, D. C. where he took charge of the stamping department of the National Mould & Stamping Co. There he first met Park B. Doing and in January 1893 in partnership with Mr. Doing, engaged in the manufacture of sheet metal ornaments for the building trade. Their first plant was in Washington, D. C., but in 1893 the business was moved to Brooklyn, N. Y. In 1907 the business was incorporated and Mr. Miller was elected president.

Distributors Appointed

Uni-Flo Grille Corp., Detroit, announces that the following sales agents have been appointed in their respective territories, to represent this company in the sale of UNI-FLO (Air-Condition) Grilles and Registers.—G. A. Voorhees, 633 South Delaware Street, Indianapolis, Ind.; George Myers, St. Louis Mart Building, St. Louis, Mo.; M. A. Disney, Minor Building, Kansas City, Mo.

W. E. Voisinnet Represents Dail

Walter E. Voisinnet, Curtiss Building, Delaware at Tupper, Buffalo, New York, has been appointed sales representative for the Dailaire System of Heating and Air Conditioning equipment for Buffalo and vicinity.

Mr. Voisinnet has had considerable experience as a heating and ventilating engineer on air conditioning and will render complete service to the dealers in that community from the standpoint of sales engineering on air conditioning and automatic heating.

George Myers Buckeye Distributor

The Buckeye Blower Co., Columbus, Ohio, manufacturers of unit heaters, fans and ventilating apparatus, has announced that George Myers, St. Louis Mart Building, Twelfth and Spruce Sts., St. Louis, Mo., is now distributor of Buckeye products in that territory.

Uno Buys Out Flue Doctors

Announcement is made by the Uno Ventilator Co., Cliftondale, Mass., of the acquisition of the business of the Flue Doctors, Inc., Saugus, Mass. The Uno company will continue the business under its present name and at the same location. Our understanding is that the ventilators and bases will be sold under the trade name "Flue Doctor."

The Uno company is one of the older companies manufacturing turbine type ventilators. The present line includes all sizes between 4 inches and 48 inches.

News Items

Air Conditioning School

Further details of the short course in air conditioning to be given by Michigan State College, East Lansing, Michigan, March 28, 29, 30, have been announced.

The registration fee for the course will be \$3.00 which includes a ticket for the banquet. The college officials state that rooms can be obtained near the campus for \$1.00 per night. Students may also stay in the hotels of Lansing which is only a short ride from the college.

Following is the tentative schedule of classes:

Tuesday

"Standardized Design Methods," G. H. Voorhees.

"Velocities and Temperatures at the Register," J. H. Van Alsburg.

Changing Heat Losses to C. F. M.

Laboratory Demonstrations, Prof. W. E. Reuling.

Wednesday

"Fan Characteristics," S. H. Downs.

"Filters and Washers," W. A. Rockafeld.

"Furnace Controls, Coal, Gas, Oil," Wm. F. Arnoldy, A. C. Grant.

Thursday

"Humidification and the Comfort Zone," Prof. L. G. Miller.

"Types of Equipment," Tom Brown.

"Heat Removal in Cooling," S. S. Sanford.

"Computing the Cooling Load," D. A. Newton.

Death of Paul E. Thompson

Paul E. Thompson, president of the Hart Manufacturing Co., Louisville, Kentucky, died January 26 at the age of 38. Mr. Thompson had been president of the company for the past two years. Previously he had been general manager of the company for ten years.

C. O. Thompson, a brother, has been elected president and has assumed his duties.

Death of Mrs. Bess Peterson

On Sunday, February 5, Mrs. Bess Peterson, office manager of the Dowagiac Steel Furnace Company, Dowagiac, Michigan, died suddenly. Mrs. Peterson was associated with the furnace company since its organization several years ago.

Mrs. Peterson is survived by two sisters, both of Dowagiac.

Eugene Gilbert Dies

Eugene Gilbert, "Uncle Gene" to many Rudy friends and associates died in January at the age of 73. Mr. Gilbert was one of the founders of the Rudy Furnace Company and served the company as treasurer from its inception to his death.

"Uncle Gene" came of pioneer mid-west stock, his grandfather having settled in western Michigan in the late 1850's. In 1887 he married Elizabeth Rudolphi, sister of Arthur E. Rudolphi, whose name the Rudy company bears. Mrs. Gilbert survives him as does a brother, Frank.

We Beg Your Pardon, Mr. Waters

On page 25 of the February AMERICAN ARTISAN we listed the names of the officers of the Indiana Association. The gentleman at the extreme right of the back row is W. S. Waters of Indianapolis and not Cleve Branham as we stated.

Convenient,
Practical »

that's the
VIKING



» » IN the shop or out on the job. That's the VIKING. Its portability alone is enough to make it a most successful investment for any sheet metal contractor. But that isn't all. The VIKING is made of the kind of stuff that

will stand the gaff long after other shears have been the cause of lost time. If you do not have a VIKING on the job, you're missing a real opportunity to cut your labor costs considerably.

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VIKING SHEAR CO., ERIE, PA.

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The Mark
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Quality

Seam
Locked
Every
Few
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Pipe

BERGER BROTHERS CO.
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EAVES TROUGH
GUTTER HANGERS
CONDUCTOR FASTENERS
MITRES
END PIECES AND CAPS
CONDUCTOR HEADS
ORNAMENTAL STRAPS
VENTILATORS, ETC.

Write for catalog of the "BB" Line
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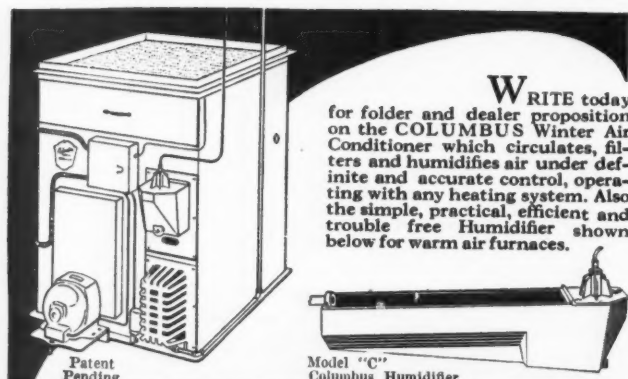
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A big Business getter. Used all the year. 50% of furnaces need repairs. Use this to open the door.



The
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SELLS FOR
\$60

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WRITE today for folder and dealer proposition on the COLUMBUS Winter Air Conditioner which circulates, filters and humidifies air under definite and accurate control, operating with any heating system. Also the simple, practical, efficient and trouble free Humidifier shown below for warm air furnaces.

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New Hays Portable Draft Gage.
Small, Complete, Inexpensive

THE NEW HAYS PORTABLE DRAFT GAGE is indispensable to every Heating Contractor, Oil Burner Dealer, Furnace Salesman and Installer. The chimney is the heart of the furnace. Use the Hays Draft Gage to determine whether it is performing its important work efficiently.

Write for your free copy of "Use of the Draft Gage" and "Trouble Shooting in the Heating Plant."

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COMBUSTION INSTRUMENT SPECIALISTS SINCE 1901

Get this book on the new Giant Industry!

AIR CONDITIONING for COMFORT

COMPLETE ENGINEERING DATA ON AIR CONDITIONING—256 PAGES, 36 TABLES, 94 FIGURES, CHARTS AND DIAGRAMS.

It gives the data necessary for figuring and installing specific jobs.

It will give you an authoritative background knowledge of air conditioning mechanics and practice.

This new book is written by Samuel R. Lewis, past president of the American Society of Heating and Ventilating Engineers, and a consulting engineer who is well known for his impressive record of heating, cooling and ventilating installations.

Send \$2 to Get This Book

If you are not completely satisfied, return the book in five days and we'll refund the money.

AMERICAN ARTISAN, 1900 Prairie Ave., Chicago

News Items

E. A. Jones Talks Before Societies

Edwin A. Jones, gas heating and air conditioning engineer of the L. J. Mueller Furnace Company, Milwaukee, Wisconsin, was guest speaker at the luncheon meeting of the St. Louis Electrical Board of Trade on Tuesday, February 7th.

Mr. Jones gave a very interesting talk on domestic air conditioning with particular emphasis on Heating and Humidification. Among those in attendance were representatives from many of the electrical manufacturing enterprises, electrical contractors and dealers.

On the evening of the same day, Mr. Jones spoke before an open meeting of the St. Louis Chapter of the American Society of Heating and Ventilating Engineers, held at The David Rankin, Jr. School of Mechanical Trades. In addition to the members of the Society, representatives of the local Utility groups, heating and piping contractors, warm air heating and ventilating dealers, engineers and architects attended the session.

Air Conditioning School

Representatives from more than one-third of the states of the Union, and the Dominion of Canada, have enrolled in the home correspondence study course in air conditioning, conducted by the University Extension Division of Rutgers University (the State University of New Jersey) in New Brunswick, N. J. The student body in the course now includes utility presidents, college professors, engineers, technical consultants, commercial leaders, plant superintendents, and technical men in many lines.

The course is arranged to give the student a thorough knowledge of the basic material of air conditioning, preparatory for more technical and advanced subjects treated in detail in later courses. The material provides for the study of basic computations, the engineering estimate, all types of equipment and apparatus, distribution systems, conditioning equipment, and control systems.

Furnace Cleaning by Oil Burner Dealers

The September issue of FUEL OIL JOURNAL carried an interesting article telling how oil burner dealers can profit by cleaning furnaces through equipping themselves with a vacuum cleaner, and cites the following reasons that can be used to convince the owner that a cleaning job should be done:

1. Low cost for cleaning.
2. Will keep the interior of the houses cleaner.
3. Reduces washing and scrubbing of floors, woodwork and curtains.
4. Reduces fuel consumption.
5. Makes the home healthier.
6. Reduces fire hazard.
7. Increases the efficiency of the heating system.

The article also details the cost of cleaning furnaces, the number of calls that can be made by a furnace cleaner, and enumerates the good-will gained by furnishing this service, and states: "Aside from making a direct profit on cleaning jobs, a dealer can train his canvassers to be on the alert for prospects for other heating specialties which he sells. While his men are cleaning a boiler or furnace a complete inspection of the heating system can be made; furthermore, the housewife can be questioned regarding how well the system heats the house. If any improvements can be made the home owner naturally will consider the suggestions made by the dealer who cleaned his boiler or furnace."

New Literature

Hess Dealer Portfolio

A new dealer portfolio, made up in loose leaf form has been prepared by the Hess Warming and Ventilating Co., 1201 South Western Ave., Chicago.

The portfolio gives a complete price structure for the dealer to use and also contains illustrations and data descriptive of all the company's items. The portfolio shows the types of dealer helps furnished by the company. A copy of this portfolio, of special interest to dealers, will be gladly sent to any dealer interested in the Hess line.

Stainless Steel for Breweries

Experience abroad has demonstrated the exceptional suitability of stainless steel of the 18-8 chrome-nickel type for equipment used in the brewing industry. This steel combines extremely high resistance to corrosion and oxidation with high strength, good ductility and the ability to take and hold a beautiful polish. Exhaustive tests have been conducted in England to determine the effect of beer upon this alloy steel and of the steel upon the beer. It was found that in every case the beer produced was of excellent quality. The steel also proved to be inert to the action of fermentation.

The properties and advantages of this steel for brewing equipment are discussed in a booklet "Use of Stainless Steel in the Brewing Industry," recently published by Electro Metallurgical Company, 30 East 42nd Street, New York, N. Y. Copies of this folder may be obtained upon request.

Forced Air Register Catalogue

A new catalogue showing the complete line of forced air registers has been printed by the United States Register Company, Battle Creek, Michigan.

The catalogue presents the complete line of faces, showing each item with an illustration and tabulating near the illustration complete information on sizes, price, finishes, size of opening and connecting duct. There is also descriptions of the salient features of each unit, a discussion of the design and mechanical features and an outline of the particular applicability of the unit.

The catalogue also lists the company's line of grilles, adjustable registers, key lock registers, dampers, quadrants, vent faces, screens, etc.

Copies of the catalogue may be secured from the company.

Stainless Steel Brochure

Republic Steel Company, Central Alloy Division, Massillon, Ohio, has prepared an interesting and valuable brochure treating applications of Enduro, the company's stainless steel.

The booklet contains a large amount of information on the architectural application of stainless steel with information on its fabrication, properties, shapes and finishes. There is also information compiled from architects and engineers who have specified steel.

The booklet is profusely illustrated with typical applications, drawings, etc. Tables and text give a complete course of instruction in the properties and handling of this material.

Copies may be obtained from the company.



The
ALLEN
MULTI
VANE
**TURBINE
VENTILATOR**

●
Exclusive inner Multi-Vane construction assures unparalleled results.
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**THE ALLEN
CORPORATION**
1036 14th Street
DETROIT, MICH.

FORCED AIR REGISTERS

The question of what to do about Registers and Grilles for Forced Air and Conditioned Air Systems is definitely and completely answered in the Independent booklet No. 32 FA.

May we send you a copy?

INDEPENDENT

INDEPENDENT REGISTER & MFG. CO.
3741 East 93rd Street Cleveland, Ohio

CHAIN AND S-HOOKS

For furnace damper regulators, thermostats, furnace clocks, skylights and ventilators. Put up 250, 500 or 1,000 feet to the reel, or in boxes to desired length. Furnished, if desired, coppered, sheradized or hot galvanized to prevent rusting.

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MFG. COMPANY, INC.**
901 Rubber Avenue
NAUGATUCK, CONN.



Single Jack Chain



Safety Chain



Sash Chain



Register Chain

ANNOUNCING—

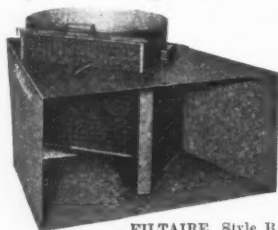
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Filter or Air Conditioner**
By
PEERLESS OF INDIANAPOLIS
**Distinct in Design—
Efficient in Performance**

Priced to fit the purse of the Home
Owner

THE PEERLESS FOUNDRY CO.
1853 LUDLOW AVE., INDIANAPOLIS, IND.

FILTAIRE

Style A, a gravity filter for warm air pipes. Styles B and C for cold air returns and shoes. Style D and specials for forced air systems.



FILTAIRE, Style B.

FILTAIRE solves your air cleaning problems.

Write for Dealer Proposition

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FURNACE & BOILER REPAIRS

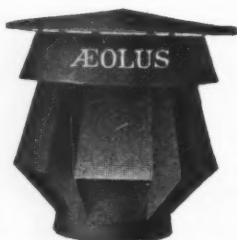
GRATE BARS AND RESTS, FIRE POTS, FEED SECTIONS, FIRE BRICK, ETC.

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Improved
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FOR industrial buildings, schools, homes, theaters, etc. Made in 14 different metals. Constant ventilation—no noise—no upkeep.

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Industrial Division of Paul Dickinson, Inc.
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Sell Furnace Repairs and Make Money



with Breuer's Ball Bearing
TORNADO
Furnace Cleaning Service

The TORNADO gets you into the basement where it is easy to sell repairs and new furnaces. And you make a profit on the cleaning job too. Hundreds of dealers say the TORNADO increased business beyond all expectations. We'll send you on request the name and statement of a dealer near you to prove our claims.

The TORNADO is the most powerful furnace cleaner built. Complete with 10 necessary attachments. Low price—easy payments—free trial. Approved by Anthracite Institute. Write for complete information on a real money maker.

Breuer Electric Mfg. Co.
865 Blackhawk Street, Chicago, Ill.

LETTERS

from OUR READERS

Editor, American Artisan:

Many furnace dealers have suffered with reduced sales so much that their outlook for 1933 is anything but encouraging. Those who are waiting for better times to magically appear are very apt to be disappointed as improvement depends upon everyone in business acting to make it better. The dealer who is really working hard to create and secure business will get it gradually, slowly at first and then in better and better volume as times improve.

In practically every city there are more worn out furnaces needing replacement and repairs than has been the case for many years. There is also less competition, as many weaker dealers have already dropped out as far as real selling is concerned. It is true there is much unemployment and suffering, but it must not be overlooked that there are still more people earning than those not working. Reduced incomes are the rule and it is a real job to sell merchandise—but it can be done.

Who can say whether a family can afford a needed heating plant or not? The common excuse of "can't afford it" is very easy to give and accept though often if an article is sufficiently desired, a way can be found to purchase it. As an example, one of our salesmen recently brought in an order amounting to approximately \$300.00, and stated the customer spent several hours in deciding how he could make the payment over one year, and finally insisted on a two year payment plan. When the job was finished the customer was so well pleased with it that he decided to pay cash and did so the day after the work was done.

Another opportunity is the fact that air conditioning has greatly enlarged the furnace dealer market if he is sufficiently enterprising to realize it and grasp the chances offered. Heating equipment is only a part of the broad air conditioning field and any dealer selling heaters is in reality selling air conditioning in a modified sense, whether he knows it or not.

Another opportunity is that in 1933 the Chicago World's Fair will attract millions of people and acquaint and interest them in heating and air conditioning. On account of air conditioning being the newest and most advertised new industry, it is sure to receive more attention at the World's Fair than other older developments.

Today's market requires items with a strictly quality basis, a price basis, an air conditioning basis, and on every appeal or combination of appeals he can offer.

Now is none too early for any dealer to plan and start action for his 1933 business year. Is he handling suitable lines of equipment? Is he taking advantage of air conditioning to increase his sales volume and his market? Does he have any plan of house to house work or other plan of selling services—cleaning or repairing, or accessories or improvements for old installations? Does he use attractive literature and cards for advertising and helping to sell the equipment or services offered? Is his showroom attractive and does it have a live display which is very desirable if not essential for the selling of air conditioning equipment or modern heating equipment?

—C. W. Hess, Hess Warming & Ventilating Co.

CLASSIFIED ADVERTISING

4 cents for each word including heading and address. Count seven words for keyed address. Minimum \$1.00 for each insertion. One inch \$3.00. Cash must accompany order. Copy should reach us eight days in advance of publication date.

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LIGHTNING RODS

Dealers who are selling Lightning Protection will make money by writing to us for our latest Factory to Dealer Prices. We employ no salesmen and save you all overhead charges. Our Pure Copper Cable and Fixtures are endorsed by the National Board of Fire Underwriters and hundreds of dealers. Write today for samples and prices. Address L. K. Didd's Company, Marshfield, Wis.

SITUATIONS WANTED

TINNER, FURNACE AND ROOFING man wants position anywhere west of Mississippi River. Twenty-one years' experience. Have run shop for seven and one-half years. Married and does not drink. Also complete set of tinner's tools for sale. Address Key 220, "American Artisan," 1900 Prairie Ave., Chicago, Ill.

SITUATION WANTED—WOULD LIKE A position in central or southern Wisconsin. Have had over twenty years' experience in furnace and plumbing work, electric wiring, pump and wind mill work and all lines that come into a small town hardware store. Married and willing to work for reasonable wages, if steady with a future. Address Key 219, "American Artisan," 1900 Prairie Ave., Chicago, Illinois.

SITUATION WANTED—BY AN ALL around sheet metal worker; one who can handle all branches of the trade as well as plumbing, steam and hot water heating. Have had 22 years' experience and can run shop, estimate and sell. Prefer connection with hardware store doing this line of work or one who is planning on it. Can furnish references as to character and ability. Address Key 218, "American Artisan," 1900 Prairie Ave., Chicago, Illinois.

TINNER AND FURNACE MAN WANTS steady job, any place. I can lay out, figure and estimate. Cut own patterns and assemble same. Would like to hear from some reliable firm. Small town no objection. I can also do plumbing. Write for further details. Address J. R. Alexander, 1006 Coolbaugh St., Red Oak, Iowa.

ESTIMATOR POSSESSING SALES ABIL- ity, 24 years of age, 8 years' experience in general sheet metal, ventilating, forced air conditioning heating, and roofing branches desires connection with firm offering future with junior partner possibilities. For interview address Key 195, "American Artisan," 1900 Prairie Ave., Chicago, Illinois.

SITUATION WANTED—ALL AROUND sheet metal worker and furnace man. Prefer Wisconsin, Michigan or Illinois. Available immediately. Address Key 167, "American Artisan," 1900 Prairie Avenue, Chicago, Ill.

SITUATION WANTED—I HAVE EXCEP- tional ability and speed as a sheet metal worker. Able to draw over-pay when work was being done. Have hardware sales experience. Desire connections with hardware store in need of man of such ability. Over fifty, married—and A-1. Reputation for honesty, sobriety and ability. Address Key 216, "American Artisan," 1900 Prairie Avenue, Chicago, Ill.

SITUATION WANTED—HAVE HAD 25 years of experience as tinner and plumber. Am qualified to do work in the following lines: auto radiator repairing, erecting steel ceilings, pump and windmill repairing, steam and hot water work, installing radiators, and any kind of mechanical job that comes into a shop. Address Key 215, "American Artisan," 1900 Prairie Avenue, Chicago, Ill.

SITUATION WANTED—A FIRST CLASS mechanic on tinning, plumbing, steam and hot water and repairing would like to rent or run a shop on commission; prefer one in connection with a hardware store in town of 3 or 4,000 and not too much competition. Am middle age—married. Address Key 214, "American Artisan," 1900 Prairie Avenue, Chicago, Ill.

SITUATION WANTED BY FIRST CLASS sheet metal and furnace man, experienced in gas installations, coal installations, forced air and air conditioning plants. Can do all branches of sheet metal work. Can lay out own work and patterns. Married, sober, steady and reliable. As for wages, a steady job and a livable wage. Address Key 205, "American Artisan," 1900 Prairie Ave., Chicago.

SITUATION WANTED — PLUMBER sheet metal and furnace man wants position. Will go any place. A-1 references. Address L. C. Hughes, Forest City, Iowa.

WANTED POSITION — AS FURNACE IN- staller or engineer. Fifteen years' experience, no furnace problem too hard. Can also sell direct or to the trade. No reasonable offer will be refused. Address Key 199 "American Artisan," 1900 Prairie Avenue, Chicago, Ill.

EXPERIENCED FURNACE SALESMAN would like position representing responsible manufacturer in Wisconsin. Address Key 202, "American Artisan," 1900 Prairie Ave., Chicago, Illinois.

WANTED TO BUY

WANTED—A USED NO. 2 GALLAGHER shear; an eight (8) foot steel straight edge; a Chicago steel slitting shear with 10 ga. capacity or lighter. These must be in good condition and a bargain. Address Key 213, "American Artisan," 1900 Prairie Avenue, Chicago, Ill.

WANTED TO BUY—A SMALL STOCK of hardware with tin and plumbing shop in connection in western Minnesota, South Dakota or North Dakota. Address Box 473, Harvey, North Dakota.

FOR SALE

FOR SALE—A PLUMBING AND HEAT- ing business with an electric refrigerator and oil burner agency. Established thirty-three years ago in a prominent city of Wisconsin—population 5,000. Stock has been reduced. Located on Main street in brick building. Five room flat above store. Only one other small dealer in city. Owner died recently; widow will lease or sell. Address Key 217, "American Artisan," 1900 Prairie Ave., Chicago, Illinois.

FOR SALE—1 SET OF 60" USED FORM- ing rolls, and 1 set of 72" forming rolls. Make offer as we are replacing with 8 ft. rolls and do not need these. Address Wendland Sheet Metal Works, San Angelo, Texas.

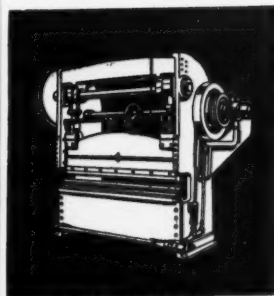
A BARGAIN—ONE NO. 30 SLIGHTLY used Bryant warm air gas furnace complete with humidifier and 8 day thermostat. Address Jacob Brenner Co., Inc., 47 Third St., Fond du Lac, Wisconsin.

MISCELLANEOUS

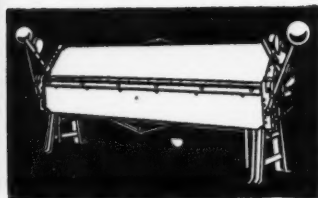
Patents and Trade Marks

Philip V. W. Peck
Barrister Bldg., Washington, D. C.

WANTED—OLD ESTABLISHED MANU- facturer is interested in making and marketing equipment for use in connection with welding or brazing. Would also be interested in any patented equipment in connection with copper service pipe or fittings. Address Key 211, "American Artisan," 1900 Prairie Avenue, Chicago, Ill.



PRESS BRAKE



HAND BENDING BRAKE

Steel Brakes—Presses—Shears

DREIS & KRUMP MFG. CO.

7404 LOOMIS BLVD.

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FURNACE MANUFACTURERS

Know "SIMPLEX" VALUES

That's why daily more manufacturers are adopting SIMPLEX as the standard humidifier. It will pay you to investigate.

SALLADA MANUFACTURING CO.

3816 GRAND AVENUE, MINNEAPOLIS, MINN.



"SIMPLEX"

Truly Automatic—

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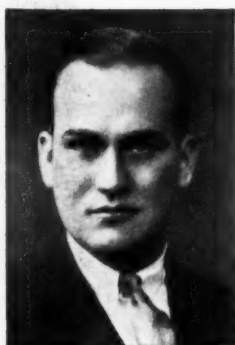
Meet our Field Force!



T. H. CRAIGE



J. R. LEWIS



T. J. FOLEY

We are proud of these representatives. They work *only* for the publishers of AMERICAN ARTISAN, and in turn are the *only* men authorized to take subscriptions for it.

Every man jack of them during his years with the Company has proved as loyal to the interests of AMERICAN ARTISAN subscribers as he is to the publishers. And that is just the way we would have it.

During the year these representatives visit every state and thousands of towns and cities. They spend their days with furnace dealers and sheet metal contractors, talking with them in their shops and on the job, and rubbing shoulders with them at local gatherings and state conventions.

The wide range of live news, information and opinion which they naturally pick up in this way, is fed back to the editors. It is one of the many close lines of communication which help to make AMERICAN ARTISAN General Headquarters for facts about the furnace and sheet metal industry.

"NONE GENUINE WITHOUT THIS SIGNATURE"

Each man pictured here carries an identifying letter which he will show you on request. It verifies his authority for taking your subscription orders for AMERICAN ARTISAN, and it is signed by our president, thus

AMERICAN ARTISAN



J. U. FARLEY



G. F. HAGENDORN



J. L. GLYNN



E. W. BARNES

MILCOR

the Favorite Line with Successful Dealers

923 HIP FINIAL

922 RIDGE AND HIP TILE WITH 924 FINIAL

915 FINIAL

PLAIN RIDGE ROLL

GLOBE FINIAL

PLAIN ROUND ELBOW

ROUND ELBOW CORRUGATED

SQUARE STYLE-B CORRUGATED

SQUARE STYLE-A CORRUGATED

OGEE GUTTER STYLE I

LAP JOINT, SINGLE BEAD EAVES TROUGH

SINGLE BEAD, SLIP JOINT OUTSIDE MITRE

STYLE-E CONDUCTOR HEAD

TRIPLEX HANGER

SELFLOCK HANGER

QUALITY MATERIALS AND PRECISION MANUFACTURING

In ALL Milcor Products

INTERLOCK Conductor Pipe, made in three styles, is precisely straight. Milcor's intricate machines shape the pipe, form the "Interlock" and seam it under pressure in one operation. The interlock seam forms a strong, watertight joint at the back of the pipe.

Milcor Galvanized Elbows, plain round, corrugated round and corrugated square are uniformly accurate in size and shape and fit perfectly with the Milcor "Interlock" Conductor Pipe.

Milcor automatic machines turn out straight, uniform half round lengths of Eaves Trough. The crimp edge shown here adds to the strength of the trough and prevents the hangers from slipping.

All Milcor products are made from the finest materials obtainable and are as near perfection as man and machine can make them.

MILCOR STEEL COMPANY

MILWAUKEE, WIS., 4117 W. BURNHAM ST.
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KANSAS CITY, MO.

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